

DECEMBER '60

MODERN TEXTILES

MAGAZINE

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FIBERS

FABRICS

FINISHES



American Viscose's
**GERALD S.
TOMPKINS**
is optimistic
about future of
manmade cellulosic
fibers—
story page 21

BLENDING THE NEW RAYONS WITH POLYESTERS

Rogovin talks about price cuts

What was new at Greenville

Control of loom stops and ends down

Complete index for 1960 issues

PLUS 11 MORE HELPFUL ARTICLES AND TIMELY REPORTS



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MODERN TEXTILES

December, 1960 Vol. 41, No. 12

MAGAZINE

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Established 1925

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American Association of Textile Chemists and
Colorists.....Lowell Techn. Inst., Lowell, Mass.
American Association for Textile
Technology, Inc.....100 W. 55th St., New York
American Cotton Manufacturers Institute,
Inc.....1501 Johnston Bldg., Charlotte, N. C.
American Cotton Manufacturers Institute, Inc.
Man-Made Fibers and Silk
Division.....10 East 40th St., New York
Man-Made Fiber Producers
Association, Inc.....350 Fifth Ave., New York
Silk and Rayon Printers and Dyers Ass'n
of America, Inc.....1450 Broadway, New York
Synthetic Organic Chemical Manufacturers
Association.....41 E. 42nd St., New York
Textile Distributors Institute,
Inc.....469 Seventh Ave., New York

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Salesmen Hear Rogosin

A forceful economic hurricane is gathering and may strike the United States, I. Rogosin stated at the Textile Salesmen's Association luncheon at the Statler Hilton Hotel, New York City, on October 20. Speaking on "Revitalization of the American Economy," Rogosin said:

"We have three great problems to deal with. The challenge to our economy by the low-cost producing countries. The challenge to our military strength by the Communist countries, and the challenge to our political strength by the so many new countries of the world."

Rogosin said the textile industry, fighting for its survival, "has not received a hearing for its arguments." But he pointed out that by now all U.S. industries are "facing the difficult problem of low-cost efficient production from all over the world, and it is high time that we fight our problems together on a general basis than on the individual industry basis."

American Viscose May Sell Chemstrand Stock to Monsanto

Monsanto Chemical Co. is negotiating with American Viscose Corp. for Avisco's entire interest in the Chemstrand Corp., namely American Viscose's 50% interest in both Chemstrand's stock and Chemstrand's subordinated notes. Avisco's share of the notes is estimated to amount to \$9,500,000 at the time the plan is to be consummated. The proposed plan calls for American Viscose to receive 3,540,000 share of Monsanto common stock, which would be subject to special voting provisions so long as they are held by American Viscose. The plan would be subject to approval by stockholders of American Viscose and Monsanto.



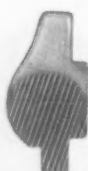
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Courtaulds Loses FTC Suit

The suit by Courtaulds (Alabama), Inc., Le Moyne, Ala., against the Federal Trade Commission, has been dismissed by the U.S. District Court in Washington. Courtaulds was contesting an FTC ruling that it label its Topel and Corval cross-linked cellulosic fibers as rayon, as specified under the Textile Fiber Products Identification Act, which became effective last March 3. Courtaulds will appeal the decision to the U.S. Circuit Court of Appeals.

The District Court's decision was a clear-cut victory for FTC, which has maintained that its generic names, set up under the Textile Act, should not be established on a strict performance basis.

Bigelow-Sanford Carpet Co., Inc., New York City, which had a similar suit against the FTC dismissed, has its case now pending before the Appeals Court. Bigelow-Sanford is seeking to upset an FTC requirement that it label its Zantrel polynosic fiber as rayon.

European Research Better?

Basic textile research can be conducted in Europe for about 50% less than in the U.S., according to Dr. Dennis P. Riley, president of Intertechnical Consultants, Inc., Geneva, Switzerland. Speaking at the recent American Association of Textile Chemists and Colorists' convention in Philadelphia, Riley said it is also not uncommon for European discoveries to be "rediscovered" in the U.S. simply because the original work was published in another language and the U.S. firm neglected to check Europe first.

While U. S. laboratories can usually do a better job on applied research, Riley said, "Europe definitely has the edge in basic research."

Chemstrand Mexican Unit

Chemstrand Overseas, S.A., a wholly owned subsidiary of The Chemstrand Corp., has formed a new company in conjunction with Julio Gonzalez Mora, to produce nylon filament yarns in Mexico. The new Mexican firm will produce nylon 66 yarns in a variety of textile and tire deniers. Current plans call for initial production by mid-1961.

Lowenstein Gets Award

Leon Lowenstein, chairman of M. Lowenstein & Sons, Inc., was the award recipient at the 10th annual award luncheon of the Textile Section, New York Board of Trade, at the Hotel Pierre, New York City, on November 10. Guest speakers included J. Spencer Love, chairman, Burlington Industries, and Archie O. Joslin, former president of M. Lowenstein & Sons, Inc. Frank Leslie, vice president of Burlington Industries, acted as toastmaster.

More Glass Fibers Research

Owens-Corning Fiberglas Corp. has completed its multi-million dollar technical research center at Granville, Ohio. A staff of more than 250 scientists, engineers and technicians is headed by Dr. August C. Seifert, director of research, and Dr. Games Slayter, vice president-research.

Franklin Process Expands

Franklin Process Division of Indian Head Mills, Inc., has begun a major expansion and improvement program at its three southern yarn spinning and dyeing plants. Some 40,000 square feet of manufacturing area is being added to the company's Greenville, S. C., and Fingerville, S. C., plants. Improvements also are under way at the Chattanooga, Tenn., plant. The expansion program will enable Franklin Process, a leading producer of package dyed yarns, to replace production at the company's plant at Philadelphia, Pa., which is to be closed within the next few months.

U.S. Helps Israeli Textiles

Israel's textile industry, under the U. S. Government's International Cooperation Administration program, will receive professional assistance. Israel, with ICA approval and support, has retained Werner Textile Consultants of New York, management consulting organization specializing in services to the textile industry. Werner will send a team of specialists to Israel to work on industrial production problems and furnish technical advice on methods of marketing organization and relevant aspects of production, management, productivity, and applied research.



SAGNER SETS NEW STANDARDS IN SUITS



The Northcool suit was tailored by Sagner, of course.

The Vycott fabric (65% polyester—35% combed cotton) was woven by Spinco Fabrics, Inc., and certified by U. S. Testing Co.

The Vycron polyester fiber was spun by Beaunit.

The Vitel polyester resin was produced by Goodyear.

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Vycron—T. M. Beaunit Mills, Inc., Fibers Division, New York, N. Y.
Vitel—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

1,000th Arrow Frame

Roberts Co. has produced its 1,000th Arrow spinning frame, Robert E. Pomeranz, president, has announced. Roberts started making changeover modernizations eight years ago, and began manufacturing new machines in 1956. In 1955, the company began rebuilding old spinning frames and has since produced more than 600 of these rebuilt and completely modernized machines, in addition to the 1,000 new Arrow frames. All told, Roberts has installed close to 4 million spindles of its high draft spinning on new and rebuilt frames and in modernization changeovers.

Crompton & Knowles Expands

Crompton & Knowles Corp., producer of textile machinery, and the F. B. Redington Co., maker of packaging machinery, have announced the merger of the Redington firm into the packaging machinery division of Crompton & Knowles. The transaction is reported to place Crompton & Knowles among the country's six largest manufacturers of packaging machinery and marks the latest step in its major diversification program. The merger was completed through an exchange of stock; no cash was involved.

Free Films on Silk, Fashion

A new 16mm sound motion picture, "Naturally, Silk," is now being offered free to adult groups, high school and college classes. The 15-minute color film tells the story of silk from ancient times to the present, with emphasis on the fabric rather than on fashion. The movie was produced for the International Silk Association (U.S.A.), Inc. and is being distributed by Modern Talking Picture Service.

Modern also is distributing another free film for women's groups at college and adult levels. Entitled "Fall and Winter Fashions, 1960-61," it previews a wide range of fashions for all occasions. The 30-minute, 16mm-sound color film is available through the courtesy of the Union Label Department of the International Ladies Garment Workers Union. Both films are available free from Modern at 3 East 54 Street, New York 22, N. Y.

Metlon Raises Prices

Metlon Corp., effective October 1, 1960, increased prices for all of its metallic yarns, including Metlon-F and Metlon-V qualities. The 1/64-inch Metlon-F is now sold at \$4.80; it had sold at \$4.25. Other sizes were proportionately increased.

New Hunter Plant

The James Hunter Machine Co. has opened new reclothing facilities in Mauldin, S. C. The reclothing station will be maintained by the firm's southern subsidiary, James Hunter, Inc. The subsidiary manufactures a complete line of fiber opening and cleaning, and feeding and blending equipment, as well as cloth and waste baling presses, and moisture measurement and control devices. The firm also has a western subsidiary, Hunter Fiber Machine Co., in Los Angeles, Calif.

Enka Office Closed

The Chattanooga, Tenn., district sales office of American Enka Corp. was closed October 28. The action was in line with Enka's plan of centralizing its marketing personnel and activities at Enka, N. C.

Pomeranz, Cooper Honored

At a dinner in Greenville, S. C. during the week of the Southern Textile Exhibition, awards honoring Robert E. Pomeranz, president of Roberts Co., textile machinery manufacturers, and John D. Cooper, Jr., president of Harriet-Henderson Cotton Mills, were given by the publication, America's Textile Reporter.

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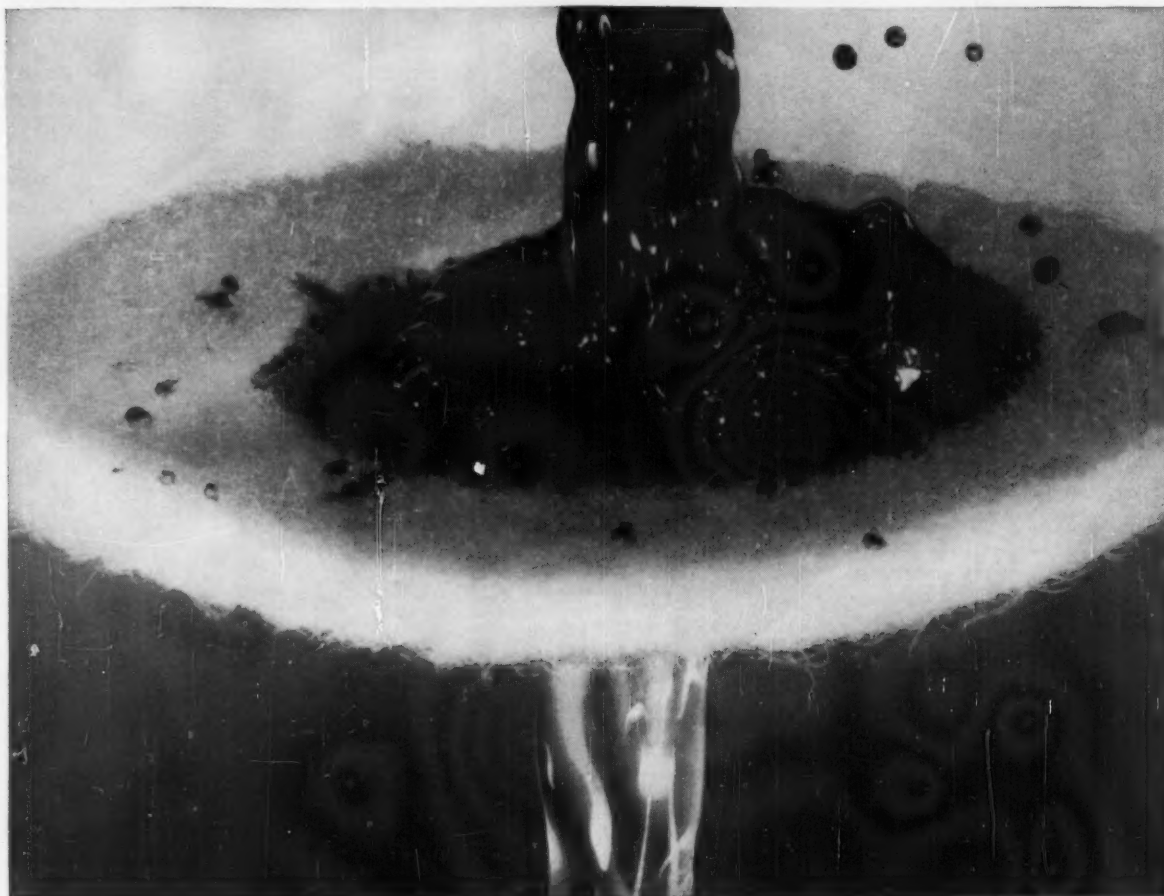
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MODERN TEXTILES MAGAZINE



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Here's a rundown of the new products and processes we have offered the industry in the past year. Look through them for the ones that affect **your** business. You can look to Du Pont to keep providing many more profit-making ideas. **"DACRON"* POLYESTER FIBER: Rotoset yarn**—Special filament yarn. Improves mill processability, permits reduction in twist levels. **Type 64 color-sealed black**—Designed for suitings—black staple and tow with broad style possibilities. **Type 62**—Filament yarn with improved hand and dyeability. Makes possible new styles and prints for apparel. **Type 35**—Improved fiber for cellulosic blends permitting broader range of fabric type. **TRL-12**—New aqueous system for improved adhesion to rubber and neoprene.

"ORLON"* ACRYLIC FIBER: Type 72—Staple for blending with cotton. Extra-comfortable, with durable whiteness and brightness for skin-contact apparel. **Fiber Sealed**—Fiber Sealed jersey knits with shape locked in—firmness jersey has never known—resists crushing, sagging—springs back to beauty. Fiber Sealed blankets with resistance to matting and shedding.

"ORLON SAYELLE"* ACRYLIC FIBER: Type 24—For full-fashioned sweaters and fine-gauge jersey knits—supplementing bulky sweaters of "Orlon Sayelle" Type 21.

DU PONT NYLON: "Antron"* nylon—New trilobal multifilament yarn with luxurious hand, rich lustre, durability. For apparel. **"Antron" 24 nylon**—Rich upholstery nylon. New beauty, styling, texture, soft highlights. **Type 288 nylon**—Improved texturing performance, bulk, dye uniformity. For the texturing industry. **Type 91 nylon**—Whiter nylon with superior texturing performance for circular knit foundations. **Tricot satinette**—Outstanding aesthetics, appearance and hand for

luxurious lingerie. **"Taslan"* textured nylon yarn** used by manufacturers to produce extra-strong, eminently sewable thread for wash-and-wear and home sewing. **"ACELE"* ACETATE: Cycloset**—Yarn development for tricot knitters. Superior running performance. For deniers from 40 through 100, either on tubes for warping or tricot beams.

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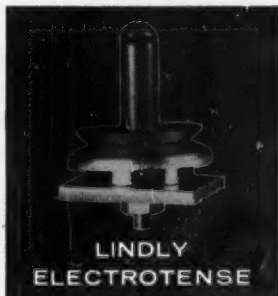
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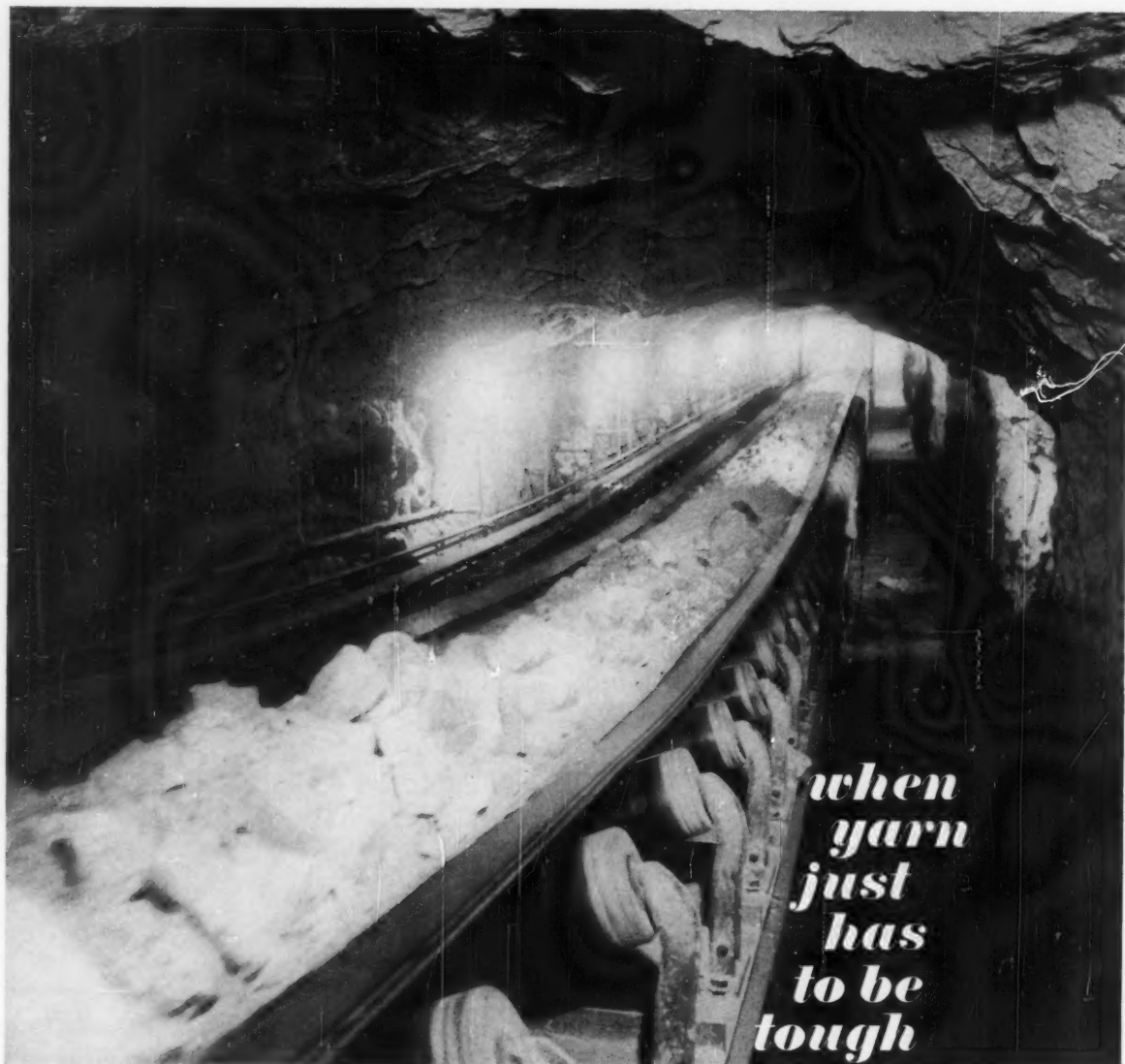
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yarn
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to be
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better
be*

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NYLON OF THE 60's

MODERN TEXTILES

Magazine

Publisher's Viewpoint

Time for that "Work Break"

By many signs and portents, the United States and its economy are entering a new era—one that will be characterized by a sharply increased regard for the value of hard work and a keener awareness that a dollar must be earned before it is spent.

Perhaps future historians will date the new era of down-to-earth respect for the virtues of thrift and a full day's work for a full day's pay from November 16 of this year. This was the day that President Eisenhower issued an order to Federal Agencies to cut their foreign spending as drastically as possible. The purpose of the order was, of course, to check the increasing deficit in the United States' payments abroad and the resultant drain on the nation's gold reserves.

Behind the events leading up to the presidential order of November 16, has been the gradual realization that the United States cannot continue to be a spendthrift nation, the world's Good Time Charlie, equipped with a bottomless bag of money to scatter recklessly about the globe, hoping that those who scramble for the free cash will love him and love him alone.

For every Good Time Charlie there comes inevitably the morning when he wakes up cold sober at last and facing the painful fact that the money he squandered to stand treat to all the moochers and freeloaders in town is gone and will never come back again. Perhaps we have arrived at the point where we, as a nation, have awakened with the aching realization that it is time to count our losses, hold on to what we have left, and go back to work again.

Other Nations Are Productive, Too

It is perhaps time to realize that, rich as we are, powerful and productive as our industrial plant may be, we are not the only nation in the world equipped with modern machines and the skill to use them. As we in the textile industry know only too painfully, other nations—in Europe and in Asia, too, are just as skillful and just as well equipped as we are to produce first class products. And, as we in the textile industry know, these foreign nations—many of them

using machinery and technology generously supplied by us in the period of postwar reconstruction—have at their disposal labor forces as energetic, at least, as ours, as skillful, and willing to work hard for far lower wages than those prevailing in the prosperity-flushed and luxury-rich United States. While many other industries and their leaders in our country ponder the significance of the presidential order of November 16, we in textiles are in a position of saying—with small satisfaction however—"we told you so."

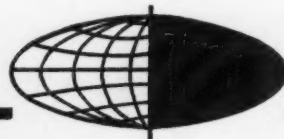
Our industry for years has been pointing out that we in the United States cannot maintain our prosperity and our necessary high level of employment, if we first build up the textile capacity of foreign nations by generous loans and outright gifts—and then let these nations flood our markets with fabrics and garments made on the machines we have supplied them.

And so we fervently hope that the long overdue awareness by the Federal Government that reckless spending of American money abroad must be curtailed may be a first step toward the realization that even more must be done if the American economy is to be restored to full vitality.

Some Protection Needed

Among these steps that must be taken is, one; to erect some kind of reasonable barriers against the flow of low-wage goods from abroad that is taking away jobs not only in textiles, but in autos, in steel, and in a score of additional important American industries. And of equal importance, a further step must be to increase the productivity of American mills and factories by persuading American workers that they need to buckle down once more to hard work; that they must give, as in the time of America's rise to greatness, a muscle-straining fair day's work for the generous day's pay they have been getting now these many years.

A. J. Macellough



World Wide

RUSSIA STEPS UP buying of all kinds of textile machinery from West Europe, according to the United Nations Economic Commission for Europe. And the Geneva-headquartered group expects the 1960 rise in cotton and manmade textile equipment exports to the Soviets to continue through 1961. ECE said Russia's buying was part of her drive to create a vast new synthetic fiber industry. Main exporters are Britain, France and Germany and, to a lesser extent, Holland, Switzerland and Sweden.

JAPAN PUSHES TEXTILE sales effort in West Europe. Hajime Nishimiya, of Japan's Foreign Trade Ministry, visited Denmark, West Germany and Switzerland to see whether those governments would agree to a boost in his country's voluntary export quotas. In Germany, the stress was laid on Japanese woollens; in Switzerland, on shirts and blouses, and in Denmark on a range of cloth and apparel.

NORTH IRISH FLAX spinners granted wage rises which should add 5% to costs by the year's end, plus 2% next July and a further 2½% in December 1961. The work week of the 12,000 spinners affected will drop from 45 to 44 hours next July, then to 43 hours in December. Linen prices should rise.

THIRD GERMAN POLYESTER plant which Krupp is building for the Soviet Union is virtually completed. The first two, under a three-year contract estimated to be worth some \$50 million, were built at Novo Kuibyshev and Stalinogorsk, the last at Kursk.

JAPANESE MILL EXPANDS. Nitto Spinning Co., is set to build a 30,000-spindle plant in Gifu City, near Nagoya. Nitto, one of Japan's "Big Ten," already has 258,000 synthetic fiber spindles. The upcoming unit will also include a research laboratory.

JAPAN WIDENS FOREIGN textile operations. Toyo Spinning will build a 15,000-spindle cotton mill in American City, near Sao Paulo, Brazil. It will be ready next year; 15,000 more spindles will be added in 1962. Nomura Trading Co. and Dundas Smith & Son (Victoria), Australia, have agreed to set up a \$446,000 cotton textile mill at Moe, in

Southern Victoria. And a group of Japanese mill representatives will finance a 355,000-spindle, 3,000-loom contract for Pakistan's textile industry.

SWEDISH WOOLEN MILL, Gotlands Ylle, of Visby, is offering a new line of modern-style blankets made from sheep native only to the Isle of Gotland. The wool is said to be equal to Shetland.

BRITAIN STRIVING for full union between the Lancashire cotton and manmade fiber industries. As Lord Rochdale, Cotton Board chairman, said at the group's meeting at Harrogate: "The industry in Lancashire is one industry processing different materials and I believe it is entirely against its interests to divide itself into two camps having little contact with each other."

AND COTTON AND RAYON research associations get ready to merge. Spokesmen for Britain's Cotton and Rayon Industry Research groups announced they would establish one organization on July 1, 1961. The group will have an annual budget of \$1.4 million, compared with \$2 million now spent for the two organizations. Aim of the combined research association will be to serve the processing and converting segments of the British textile industry.

SPAIN GIRDS to modernize its archaic cotton textile industry. The National Spanish Commission on Productivity is mapping a widespread program of industry reorganization that would rely heavily on U. S. financing (through the Development Loan Fund or Export-Import Bank) and U. S. textile machinery and equipment. American management consultants would also be called in.

PHILIPPINES MOVE AHEAD with plan to improve research on such fibers as cotton, ramie and agave, the most popular of which is sisal. The nation's goal is to wipe out the present need to import some \$200 million worth of textiles annually and to achieve self-sufficiency. The National Science Development Board has earmarked funds for the research drive.

JAPANESE NONWOVEN PAPER has been developed by Saitama Prefectural Textile Laboratories. The Vinylon paper is said to be highly water-repellent and strong enough for use on sliding doors.



This month, American Viscose Corp. proudly marks the 50th anniversary of its first spinning of marketable rayon. Looking ahead, its president believes that the best days of cellulosic manmade fibers are to come.

The persuasive optimism of Gerald Tompkins

By Jerome Campbell

EDITOR, MODERN TEXTILES MAGAZINE

IN THE SPRING OF 1919, a young chemical engineer, Gerald S. Tompkins, just out of uniform after serving in the United States Army, was hired as a chemist in the laboratory of the American Viscose Corporation at Marcus Hook, Pa., some 25 miles south of Philadelphia. The company that hired him was only nine years old, but was already remarkably successful as the leading American producer of the new cellulosic yarn still called "artificial silk" but soon to be widely known by the coined name, rayon.

Tompkins came to his new job as an essentially serious, well-balanced personality equipped with a thorough grounding in the basics of industrial chemistry acquired in three years of hard study at Yale's Sheffield Scientific School. Along with his pleasant, equable temperament, Tompkins brought with him to American Viscose, rare ability both as a scientist and a manager, enriched by a New England Yankee's deep respect for the virtues of hard work, prudence and reflective foresight. These traits have brought him to the president's chair of American Viscose Corporation, some 36 years after he joined the company as a young man of 23. And, perhaps more important to him, they have won him the sincere respect of all who have worked with him in the company during these four decades of unstinting service.

Thus it is a matter of quiet but nonetheless very special pride for Gerald Tompkins that this month American Viscose, the huge United States manmade fiber industry—by far the world's largest—and indeed the whole vast American textile industry, celebrate the 50th anniversary of the first successful production in the United States of manmade fibers in commercially usable quantities.

The corporation Gerald Tompkins heads, after 50 years of growth in productive capacity and remarkable improvement of its products, is the world's largest producer of rayon, the second largest producer of acetate, and an important manufacturer of another offshoot of cellulose research, cellophane packaging films.

Few men know more about the art and science of manufacturing rayon and other useful cellulosic materials than Gerald Tompkins. His path of progress in the American Viscose Corporation was largely on the technical and production side until he assumed the presidency in 1955. From his first job as a chemist in the Marcus Hook laboratory, he moved in 1921 to the post of chief chemist at American Viscose's third and at that time brand new plant at Lewistown, Pa. In 1934, he became plant manager.

(Continued on Page 48)

Why Beaunit cut polyester prices

By the Editors

ON OCTOBER 17, Beaunit Mills drastically cut the price of its new Vycron polyester fiber. Specifically, 3 denier Vycron was slashed from \$1.36 and 1½ denier from \$1.26 both to \$1 a pound. The three remaining producers of polyester fibers, at this writing, have not followed Beaunit's example. For three denier, Du Pont's Dacron and Celanese's Fortrel remain \$1.36; Eastman's Kodel \$1.41.

In spite of the fact that his competitors have not reduced prices, Vycron's reduction caused a tremendous sensation in the textile industry. The familiar complaint about "unsettling the market", so often heard at the time of a sharp price cut, was again voiced wherever textile people gathered for talk.

In an exclusive interview, MODERN TEXTILES MAGAZINE, asked Beaunit's president, Israel Rogosin, to give his reasons for the price cut.

The Vycron price reduction, he said, was dictated by a painfully elementary law of business. "We are producing more Vycron than we are selling and we are hopeful", Rogosin said, "that the price cut will increase our sales of this new polyester fiber. Our capacity for Vycron today is 12 million pounds a year, but our sales are nowhere near that figure. Our price cut will enable us, we hope, to sell the fiber at our full capacity."

Rogosin makes no secret of his conviction that the promotional policies of a number of fiber producers are wasteful, extravagant and pointless in their efforts to obtain acceptance for their fibers in the textile industry. "If we take into consideration the fantastically high expenditures for advertising and other promotional efforts being borne by some yarn producers in order to gain acceptance for their fibers by mills, converters, cutters and retailers, these fibers are selling below cost", he said.

"For myself", he declared, "I do not believe in selling below cost of production, and that is why I have refused to follow the trend of pouring out millions of dollars for the promotion of Vycron. Among the fiber producers, some who are angry with me today for cutting the price of Vycron will thank me in time, I believe. They will thank me because I have had the courage—or the good sense—call it what you will—



to puncture the crazy bubble of senseless and constantly expanding promotion costs to introduce a new fiber. The sad but true fact is, Rogosin said, "that sometimes when a general mood of insanity takes over, it is the man who behaves rationally who is frequently called crazy".

Turning to Beaunit's overall operation as both a fiber producer and a manufacturer of knitted and woven fabrics and garments, Rogosin with some pride made the point that his company was doing well this year. He noted that net income for the first six months had been \$1,934,484 on sales of \$54,351,142.

Despite the inroads of nylon, he expressed the belief that the outlook for rayon tire cord, of which Beaunit is a producer, is very good. "Rayon tire cord of the Tyrex quality", he said, "is continually being improved, and actually gives more miles of service per dollar than any other fiber."

Rogosin further stated that sales of rayon textile yarn are holding up and that Beaunit is making satisfactory progress with its new polypropylene fiber. Polypropylene yarn, he said, is being shipped to customers, and by April 1, Beaunit will reach its full capacity, with its present equipment, of 12 million pounds a year. The company's output of nylon tire yarn is also coming along fine, he noted. Capacity is 2½ million pounds a year, and production of salable yarn is just getting under way.

Commenting on reports earlier this year that Beaunit had discussed a merger with Hercules Powder Company that did not come to fruition, Rogosin said that Beaunit is open to proposals for a merger that would be advantageous to the company and its stockholders. "In considering merger proposals", he said, "our basic aim is to protect and solidify the corporation."

Beaunit Mills, Inc., originally a knitting business established by Rogosin in the 1920's, is now divided into a fibers and textile division. The fibers division includes American Bemberg, North American Rayon Corporation, Coosa Pines tire cord plant, and Skenandoa Rayon Corporation. The textile division operates weaving, knitting, spinning, dyeing and garment manufacturing plants. ■



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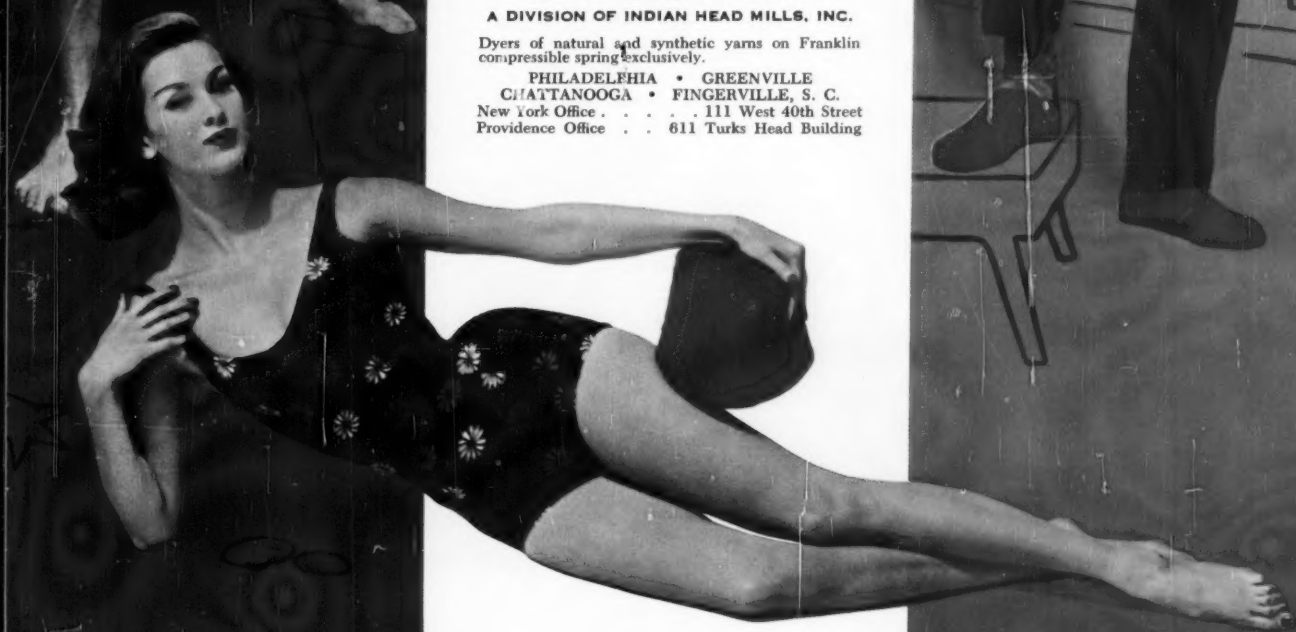
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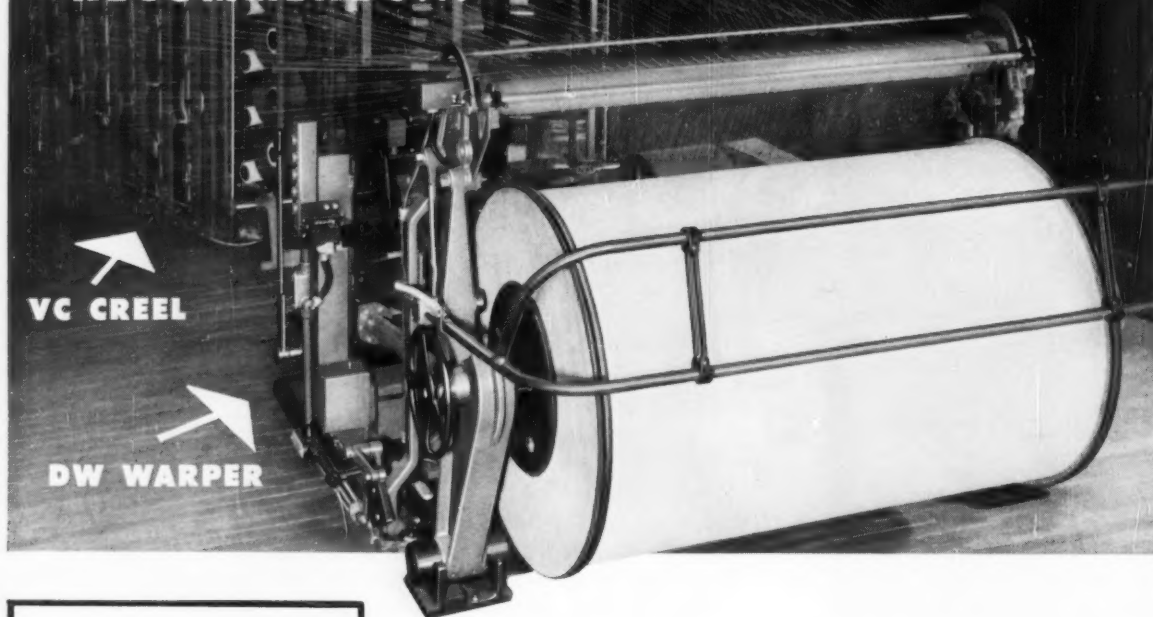
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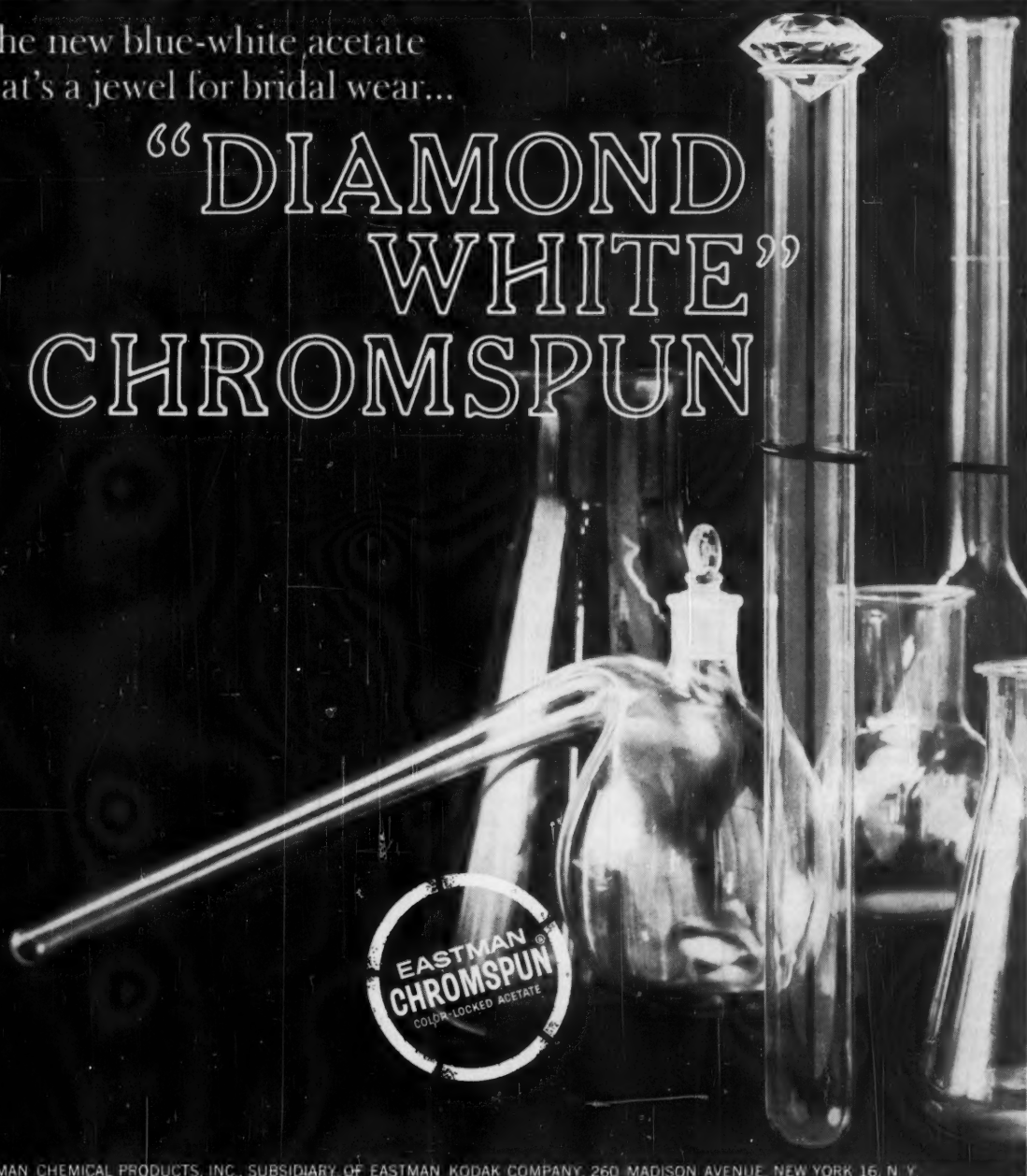
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Control of LOOM STOPS AND ENDS DOWN

By Norbert L. Enrick

INSTITUTE OF TEXTILE TECHNOLOGY

Conclusion of a three-part series

The formula for sample size presented in the preceding article is applicable wherever a distinct number of items can be selected, such as specimens of raw material, bobbins, etc., as in the previous illustration. The test may be for yarn size or count, neps, single end or skein breaks or a multitude of other measurements.

There is, however, another type of test where a distinct number of items in the sample need to be selected, but where the sample is *observation time*. This occurs in ends down and loom stops testing. A slightly different formula is used for this purpose. This formula reads:

Number of Stops or Ends-Down to be Observed =

$$(t \times 100/\%E)^2 \text{ --- (2)}$$

The values t and $\%E$ retain their former meaning. Now assume that ends-down observations are made in spinning and that the " t " value has been selected at 2.0 and the $\%E$ is 10. Thus, a difference in ends-down of ± 4 for an average running condition of 40 ends-down per 1000 spindle hours would correspond to $\%E = 10$. The formula above now becomes for this specific example:

$$(2 \times 100/10)^2 = 400 \text{ Ends-Down}$$

Thus, when making ends-down observations on a particular group of frames, under the conditions set forth above, the observation time should be long enough to cover a minimum of 400 ends-down. As soon as the 400th end-down is recorded, the test is stopped and the conventional value of "ends-down-

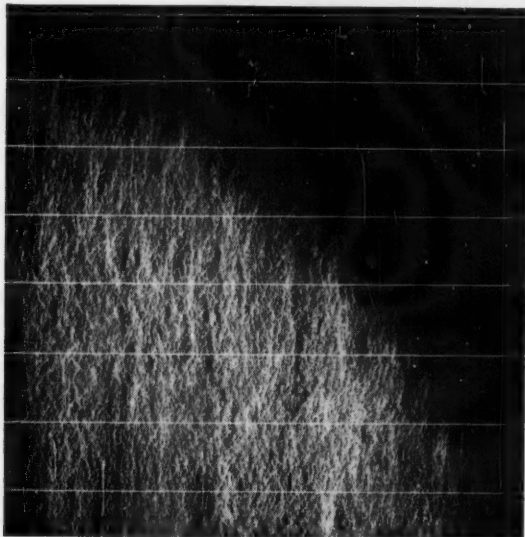
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TABLE VII. NUMBER OF TESTS REQUIRED FOR CONTROL OF VARIATION COEFFICIENTS

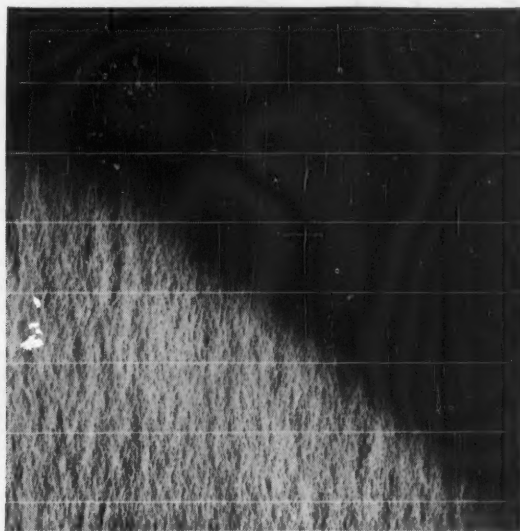
Allowable Sampling Error %E	Sampling Risk, %			Allowable Sampling Error %E	Sampling Risk, %		
	0.3	1.0	5.0		0.3	1.0	5.0
1	45,000	33,800	20,000	26	67	50	30
2	11,250	8,450	5,000	27	62	46	27
3	5,000	3,756	2,222	28	57	43	26
4	2,812	2,113	1,250	29	54	40	24
5	1,800	1,352	800	30	50	38	22
6	1,250	939	556	31	47	35	21
7	918	690	408	32	44	33	20
8	703	528	312	33	41	31	18
9	556	417	247	34	39	29	17
10	450	338	200	35	37	28	16
11	372	279	165	36	35	26	15
12	312	235	139	37	33	25	15
13	266	200	118	38	31	23	14
14	230	172	102	39	30	22	13
15	200	150	89	40	28	21	12
16	176	132	78	41	27	20	12
17	156	117	69	42	26	19	11
18	139	104	62	43	24	18	11
19	125	94	55	44	23	17	10
20	112	85	50	45	22	17	10
21	102	77	45	50	18	14	8
22	93	70	41	55	15	11	7
23	85	64	39	60	12	9	6
24	78	59	35	70	9	7	4
25	72	54	32	80	7	5	3

Example: If Variation Coefficient (%V) of twist is normally 6% and the high limit is 9%, then the difference of 3% divided by the base of 6% yields 50% as the Allowable Sampling Error, %E. Entering the Table at the 50% level, we find that the sample size for an 0.3% sampling risk is 18, for a 1% risk it is 14, and for a 5% risk it is 8.

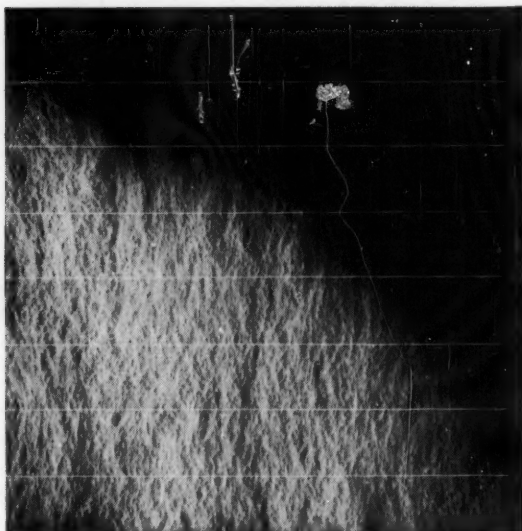
* Since writing this article, Professor Enrick has joined the teaching staff of the Graduate School of Business Administration, University of Virginia.



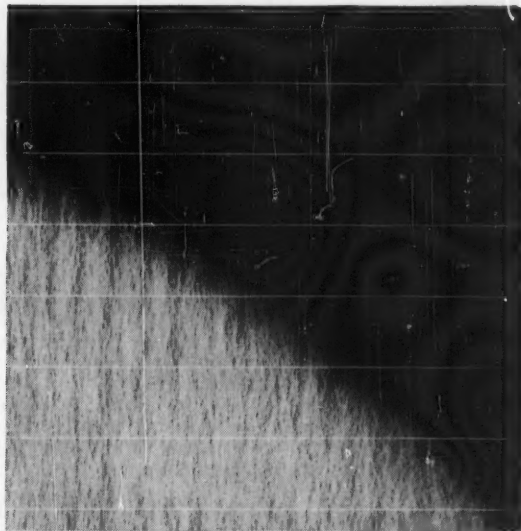
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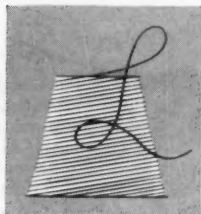
3. BLENDED ORLON® SLIVER...relaxed and high shrinkage components prior to rebreaking to eliminate over-length fibers.



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Control of Loom Stops

(Continued from Page 26)

per-1000-spindle hours," is calculated. This assures that just the right amount of testing has been done in terms of observation time.

Control of Variation Coefficients

The material presented so far has been concerned with determining the proper amount of testing for control of sample averages and ends-down and loom stops. Sometimes it also becomes desirable in a mill to maintain close control over variation coefficients, such as control of variation coefficient of yarn twist. For these types of requirements, the ready-made data in Table VII may be used. The illustrative example on the bottom of the table serves to show its application, and is further discussed below.

The formula used in computing this table is very similar to the formula used for Number of Stops or Ends-Down to be observed.

$$\text{Sample Size} = (t \times 100)^2 / (2E^2) \quad (3)$$

The values of "t" and "%E" retain their old meaning. Now let it be assumed that a mill desires to control the twist variation of incoming shipments of yarn. The normal twist variation coefficient is 6% for the particular type of yarn, with a high limit of 9%. Any yarn testing more than 9% twist variation coefficient is to be rejected. The difference between 9% and 6% is 3%. This 3% expressed as a percentage of the normal average of 6% yields 50% as the

Allowable Sampling Error, %E. Assume that the Sampling Risk has been chosen by the mill at 1%. Then from the sample size formula:

$$\text{Sample Size} = \frac{2.6^2 \times 100^2}{2 \times 50^2} = 13.5 \text{ or } 14 \text{ (rounded out)}$$

The value of 2.6 for "t" comes from Table VI, and is used in the same meaning as in the prior formulas. Instead of computing the sample size each time, the ready-made data in Table VII may be used.

CONCLUSION

This paper has presented the facts, formulas and considerations involved in the statistical and engineering decisions in setting up optimum testing schedules for a mill's routine quality control program. The tools for determining the proper amount of sampling are presented in convenient tabulated form, readily usable in the every-day textile mill requirements.

It is emphasized that the methods furnished here are those utilized in routine quality control work. In research and special experimental investigations, more refined methods are usually required to obtain best results.

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Booklet Gives Fiber Data

The manmade fiber producing industry in the United States leads all other nations in productive capacity. In 1959, it had 2,300 million pounds of capacity or 29.1% of the 7,900 million pounds of world capacity, exclusive of communist Europe for which complete information is not available. These and many other facts about the industry have been released last month in a booklet titled "Manmade Fibers Fact Book" published by the Manmade Fiber Producers Association.

Begun in the U.S. with rayon 50 years ago, the industry now produces 12 fibers in 88 plants costing \$1,881,210,000 to build, the booklet reports. The book discusses in detail the contributions the industry makes to the national economy, consumer acceptance of manmade fibers, trademarks as related to generic names and other subjects of interest.

The industry employs 64,320 persons who received more than one third of a billion dollars—\$351,607,000—in salaries and wages last year. Of these, 48,500 are production employees. The industry has an investment in plant and equipment of \$38,788 per production worker.

Raw materials, supplies, fuel, utilities and transportation cost the industry \$796,783,000 in 1959. Cellulose, derived from wood pulp and cotton linters, and chemicals were its major purchases, and cost \$685,248,000; utility and fuel bills totaled \$51,983,000, and haulage costs \$59,552,000.

The survey shows the South is the major producing area for manmade fibers. There are 61 plants in 35 communities in nine Southern states. The remaining 27 plants are located as follows: Four Middle Atlantic states, 15 plants in 10 locations; three Central states, seven plants in five communities, and four New England states, five plants in as many localities.

Sixty-seven of the 88 plants are located in municipalities of less than 40,000 population.

Manmade fiber production workers are the highest paid in the textile field, according to the survey. During January of this year, their average work week was 39.77 hours, for which they received an average of \$87.70 or \$2.205 per hour.

In addition to their weekly pay, the survey shows that they are provided with additional benefits averaging 21 cents for each dollar they earn. Of this, 3.8 cents is required by law for social security, workmen's compensation and unemployment insurance. The remaining 17.2 cents is paid by the industry for employee benefits such as vacations, holidays, pensions, life and medical insurance.

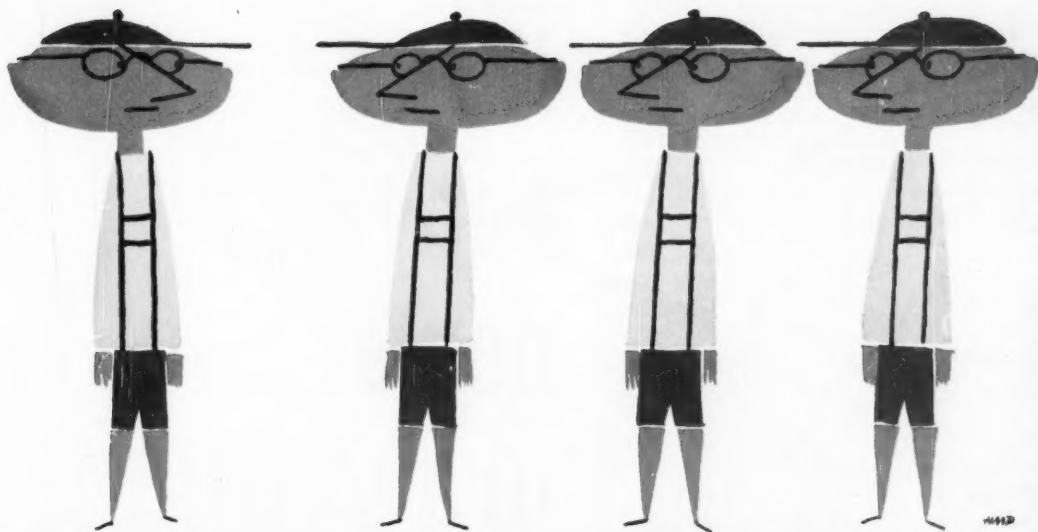
Although the overall manmade fiber industry is comparatively young, the survey points out that the length-of-service records of employees is imposing, with men averaging 12 years, 3 months, and women 10 years, 9 months. Its employee turnover and absenteeism records are among the lowest in the nation.

PTI Enrollment Rises

The freshmen class at the Philadelphia Textile Institute of 154 students is the largest entering class in 11 years and represents an increase of approximately 50% over other entering classes since that time. Mott Linn, PTI director of admissions, said the increase "can probably be attributed to the increased facilities at the college along with its more diversified curriculum and the excellent student-faculty ratio."

Dr. Bertrand W. Hayward, PTI president, announced the appointment of Frank H. Kaufmann, vice president of the Steel Heddle Manufacturing Co., as general chairman of the college's Corporate Giving Program for the 1960-61 campaign.

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1/832



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- Uniperol W** — leveling and protective colloid agent for dyeing wool, polyester and polyamide fibers.
- Uniperol AN** — retarding and leveling assistant for cationic dyestuffs on acrylic fibers.
- Albigen A** — for leveling and stripping of vat dyes.
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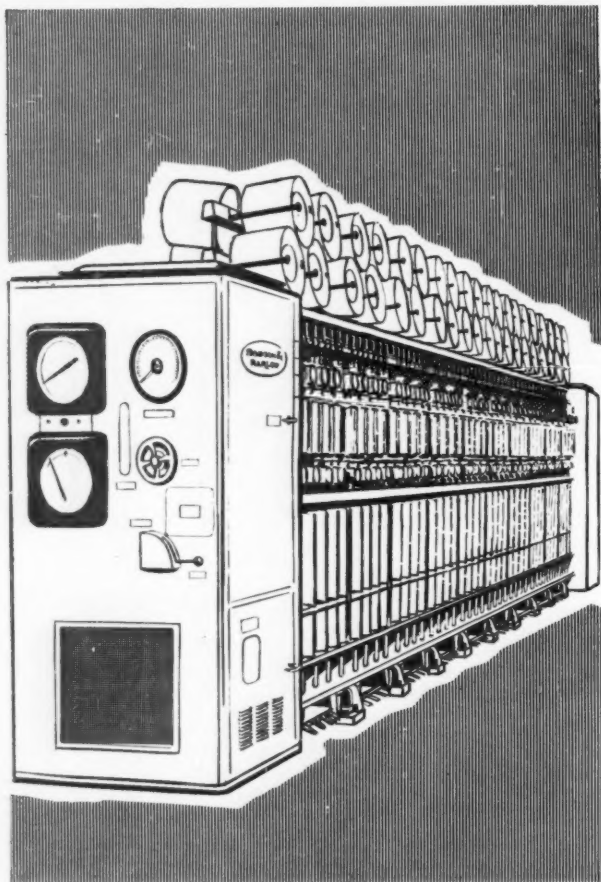
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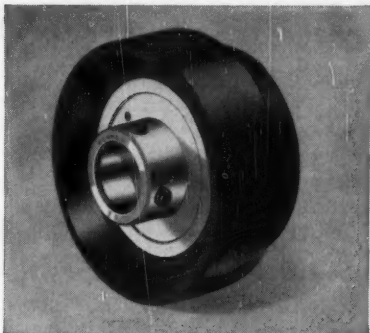
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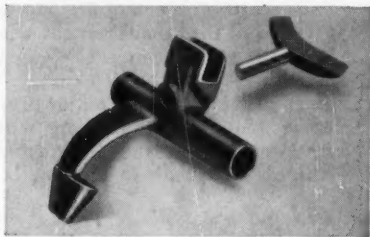
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Idler shell on driving roll which contacts the small end of cone on the Model 102. If this shell sticks on the bearing, it will cause hard nosed cones and burned yarns. Therefore, it requires the best in materials and workmanship.



Close delivery thread guide and dog for Foster Model 102. These parts are made from steel forgings which require very accurate and expensive dies. The finish on these parts also plays an important part in their performance.



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377-0

Labor-cutting machinery excites biggest interest at Greenville

Here are summary descriptions of some of the new mill equipment on display at the Southern Textile Exposition

By the Editors

MILLMEN by the thousands crowded the Southern Textile Exposition in Greenville, S. C., last October searching for ways to cut costs and speed output of yarns and fabrics. Moving through the labyrinthine halls of the vast exhibit they studied closely the rich variety of machines and services on display. By all odds, the machines that drew the biggest crowds and the most prolonged scrutiny were those that were new and held out the promise of sharply reducing labor costs. Outstanding among these were several

new machines for doffing spinning frames and new high-speed, highly automated winding equipment. And shuttleless looms were the object of fascinated study by the lower echelons of mill management who always turn out in force at the Greenville biennial event.

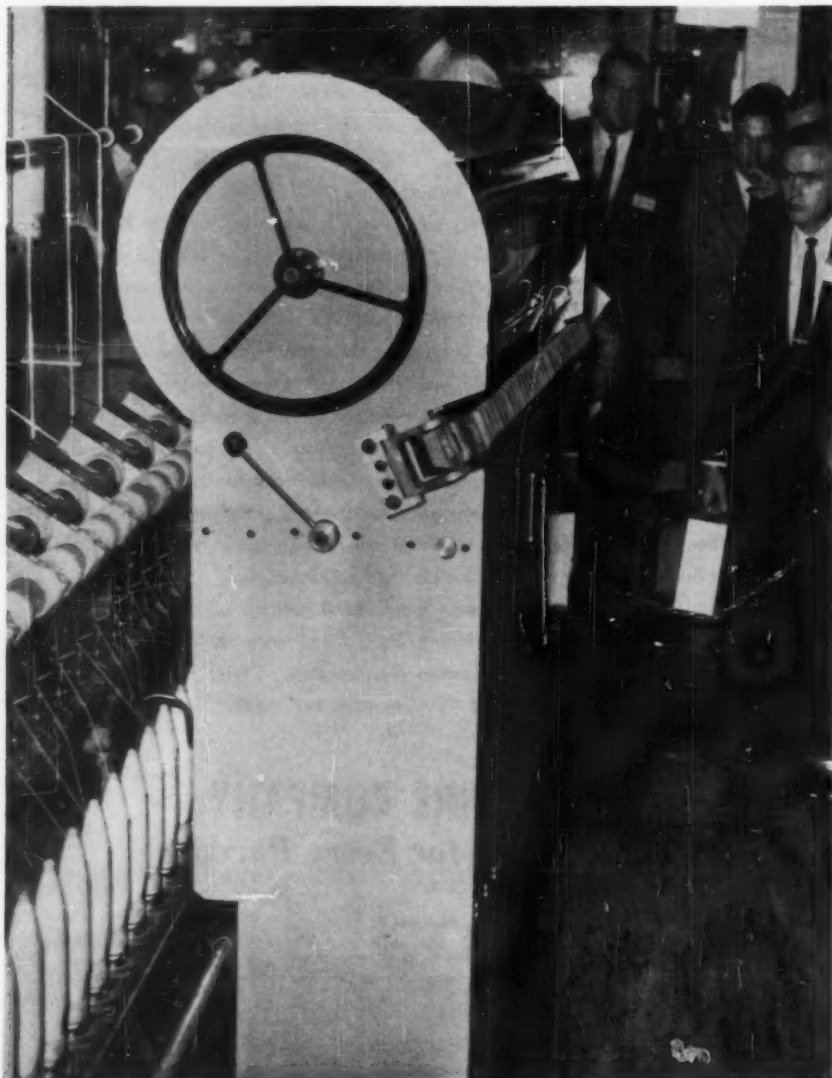
In the following report, divided into the major divisions of yarn and fabric manufacturing, along with dyeing and finishing, *MODERN TEXTILES MAGAZINE*, offers a summary of the major aspects of the Exhibition.

YARN PREPARATION

Opening, Picking, Carding

James Hunter, Inc. introduced a new development with its offering of a complete opening line for the first time. This step was made possible by a combination of Hunter's new Multi-Tuft bale blender with the company's established Fiber Meter and Auto-Weighing conveyor plus the incorporation of a newly acquired line of opener-cleaners. This system gives automated bale opening, eliminates short-term blend variations, assures more consistent yarn quality and permits more complete blend control. The new Multi-Tufter bale blender removes cotton from the bales in small tufts by a specially designed pinned cylinder. Each tuft, it is said, is more uniformly and completely opened than by the usual hand labor.

CROWD STOPPER—Shown for the first time, Willcox & Gibbs' machine for doffing spinning frames was carefully studied by mill people. The doffer is said to operate at 80 feet a minute



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wash solutions . . . Centrifuges . . . Vacuum wash tanks . . .
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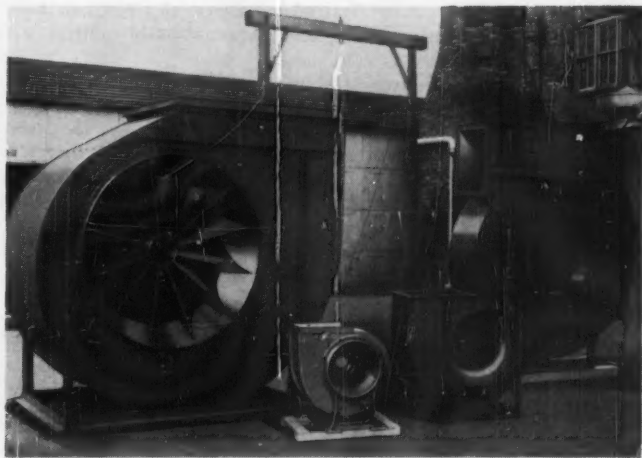
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Europe: Aluminium-Schweisswerk A. G.
Schlieren-Zurich, Switzerland



MODERNIZED FRAME—Saco-Lowell display included this standard frame equipped with improved MagneDraft and Duo-Roth drafting

An interesting development called "sonic automation" was shown by **Fiber Controls Corp.** for delivering a uniform stream of fiber to a card or garnett. The system uses a sound element beamed across a tube to a receiver. Any desired quantity of fiber can be measured continuously and automatically within a rectangular tube.

Proctor & Schwartz showed a refined model of its new 729B Blending feed, first shown at Atlantic City. The improved model is said to yield a higher degree of accuracy and better opening of the fibers while it automatically weighs and proportions various types of baled stock into process.

Drawing, Spinning

Once again, millmen were attracted by the possibilities of ever increasing speeds for the draw frame, coupled with larger can sizes. Those draw frames operating at Greenville were little changed from what was seen at Atlantic City. However the trend was more evident toward two-delivery draw frames as this development goes hand-in-hand with increasing speeds. **Ideal Industries**, for example, was running its two-delivery draw frame at around 750 feet per minute, delivering into 18" x 42" cans.

American Rieter, showing equipment at Greenville for the first time, had its DO draw frame running about 600 feet per minute.

Silver-to-yarn spinning is always an intriguing process for mill men and its use is slowly spreading. Two units were operating on this system at Greenville. One was an American version made by **F. A. Young Machine Co.** called the Model VY-5. It was spinning 30s and 40s directly from drawing silver. The other unit was the Japanese O-M spinning frame

which was functioning the same as at Atlantic City.

Roberts Co. had four all-ball-bearing spinning frames running. A spindle speed of 15,000 rpm was a highlight of the exhibit running on an Arrow frame making 40s combed yarn with a 1-13/16" ring, traveler speed of 7,120 feet per minute and a front roll speed of 177 rpm on a 1"-dia. roll. Eight different drafting systems were shown: four for cotton, two for worsted and two for either cotton or worsted systems roving. Roberts also had its new Roberts-Tematex ParaDrafter with AutoEvener on exhibit, the same as demonstrated for the first time in this country last spring at Atlantic City.

Spinning changeovers were featured by **Whitin Machine Works**. A highlight was the Whitin Long Bottom Apron changeover with 60-degree roll stand. Whitin emphasized that uniformity and breaking strength of the yarn can be improved; lubrication is minimized or entirely done away with, and maintenance and cleaning problems simplified when outdated and worn elements such as cradles, bands, rolls, nose bars, etc., are replaced.

Saco-Lowell Shops featured its Replacement Parts Division at Greenville. A double doffer condenser was displayed for improved handling of trashier cotton. Also, a new self-threading calender for cards was shown which allows easier and quicker piecing-up. Attracting attention was a standard S-L spinning frame equipped with MagneDraft top roll weighting on one side of the frame while Duo-Roth was installed on the other. Saco-Lowell provided transportation over to its nearby Easley plant for those who wished to see major lines of capital equipment in operation.

(Continued on Page 40)



UNICONER IN ACTION—Leesona's new high-speed, highly automated winder drew much attention

DYEING and FINISHING SECTION

all about DRYING

(audio)

There are many
secrets in . . .



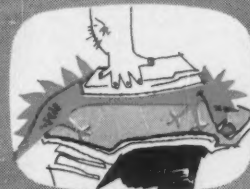
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drying fabrics



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resins



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. . . or high frequency
systems



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Through experience
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(audio)

Butterworth
has learned the
secrets of drying



(audio)

. . . Under high
pressures



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. . . at tremendous
temperatures



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. . . with great speeds



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Let Butterworth
build the equipment



(audio)

. . . to solve your
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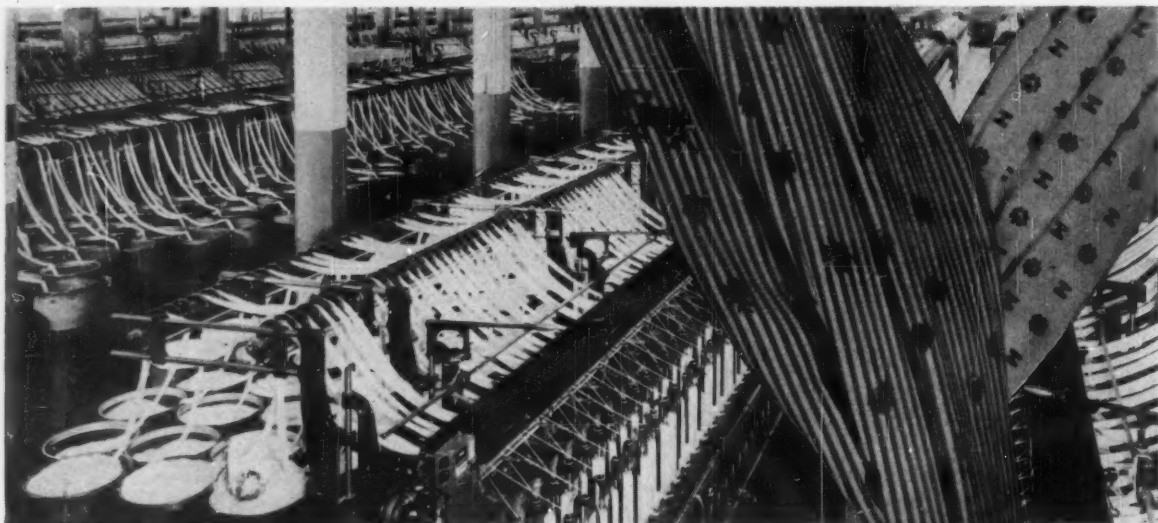
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More summaries of AATCC Convention Papers

Today's Trends in Dyeing, Finishing

Dyeing and Finishing Manmade Fibers in a Cotton Finishing Plant

Heyward V. Simpson,
Reeves Brothers, Inc.

DURING THE LAST DECADE we have witnessed the introduction, development, and tremendous growth of many new manmade fibers. Fabrics made of cotton blended with many of these fibers have gained widespread acceptance.

One of the earlier blends introduced with the polyamide-cotton for fabrics of improved abrasion resistance and strength. Cotton finishing plants handle these goods with relatively minor process changes.

More recently, cotton-acrylic fiber fabrics have been processed, and can be expected to grow in volume.

Since introduction, the polyester fiber-cotton blends have enjoyed a phenomenal sales growth. Fabrics in this group are today a major item, accounting for millions of yards of production annually.

The processing of these fabrics is both an opportunity and a demanding challenge to our cotton finishing plants.

An obvious basic requirement of this work is that a good job be done on the cotton fiber under those conditions which do not harm the manmade fiber portion of the blend. This demands wide-range familiarity with the cotton finishing art.

It is also necessary to meet the finishing needs of the manmade fiber. In this area many new skills and techniques must be learned, some machinery modified, or new machinery installed.

There is then the need to study, to adjust, to modify processes and machinery for optimum results with each individual blend. This must go on continuously, since improvements in colors, chemicals and processes are constantly being made.

The increasing volume of well-dyed, properly finished, blended fabrics emerging from our plants is evidence that cotton finishing plant men and machines are measuring up to the challenge of the manmade fibers.

Improved Textile Properties From New Chemical Structures

Arnold M. Sookne,
Harris Research Laboratories

THE USEFULNESS OF FIBERS depends both on their physical properties, such as strength, elasticity and softening point, and their chemical properties, which affect dyeability, moisture sorption, etc. These physical and chemical properties depend in turn on the

chemical composition of the fiber and the arrangement of its molecules, i.e., its structure.

In recent years the fiber producers have provided the textile industry with a brilliant array of fibers with new chemical structures and improved textile properties. These new fibers have involved increased crystallinity, as in the isotactic polyolefins, improved orientation, or the use of graft polymers.

The textile chemist in his finishing operations also changes the structures of the fibers he handles, and in a sense he creates new fibers from cotton, rayon or wool by chemical modification. Some relationships between the chemical structure and useful textile properties of such chemically modified fibers will be discussed, with particular reference to wash-wear treatments for cellulosic fibers. New evidence is presented that for some wash-wear treatments the introduction of intermolecular crosslinks is largely responsible for the improved useful properties, and that a very large improvement in utilization of the cross-linking reagent should be possible.

There has been great progress in textile finishing in recent years, but there remain many opportunities for the improvement of old processes and the creation of new ones. The textile chemist and finisher is in a unique position to attempt such improvements, because he can chemically modify the final fabric or even the garment itself.

Dyeing Acrilan and Acrilan 16 And Their Blends

Walter Stump,
The Chemstrand Corp.

IN CHEMSTRAND'S regular Acrilan acrylic fiber, which we call Acrilan 1656, we have both basic and acidic groups. It is made in a variety of deniers and staple lengths and in its gray state looks creamy. It is dyeable with all the dyestuffs which will dye wool and also with disperse and basic colors, some naphthols and chromes. It can also be dyed with vats and sulphurs, but, in view of the ease of dyeing which the other dyestuffs offer, we have not pursued the development of dyeing procedures for vats and sulphurs and have very little information available at this time regarding them.

In our Acrilan 16, no dye sites have been provided for any but the disperse and cationic dyestuffs. This fiber, which has been on the market since early this year, however, can not be considered a completely new product. It is an improvement of the Acrilan 16 which has been on the market for some time.

Acrilan 16 is considerably whiter than Acrilan 1656 but, aside from its color, it is very similar to Acrilan

1656 in its other physical characteristics. With the disperse dyes we can produce a full color range from pale pastels to black on Acrilan 1656, but on Acrilan 16 they do not readily exhaust in heavy depth. Usually we consider a total dyestuff content of 4% the limit of depth obtainable with disperse colors. Basic dyes are well suited for dyeing all shades, including black, on Acrilan 16.

The most interesting development resulting from the availability of two acrylic fibers with different dyeing characteristics has been the production of two-color dyeings of 100% acrylic fabrics in a single bath. The reason for this is found in the fact that basic dyes are best applied to Acrilan 1656 from a neutral or slightly alkaline dyebath. The more we lower the pH, the more we lower the absorption of basic dyes on Acrilan 1656, until at a pH of 3 or lower there is only a very faint staining of Acrilan 1656 by basic dyes.

Acrilan 16, on the other hand, has excellent affinity for basic dyes and can be dyed to any practical shade at almost any pH range below 8; therefore, if we have a fabric in which both Acrilans are blended, we can make use of the affinity of Acrilan 1656 for wool dyestuffs by making up the dyebath with such dyestuffs for Acrilan 1656 at a pH of 3 or lower, adding at the same time the basic color which will be absorbed even at such a low pH by the Acrilan 16.

A New Continuous Dyeing Process

Dr. Richard Kern,
Sandoz, Ltd., Basle, Switzerland

THE PAPER opens with a discussion of mechanization and automation of textile processing in general. Continuous dyeing processes such as pad-steam and their limited possibilities, as far as the application of various dyestuff groups are concerned, are briefly discussed. It is shown that it is impossible to apply continuously substantive dyes, except in very pale shades successfully and economically. Experiments prove that in normal dyeing the dyeing time is shortened if the temperature of the dye bath is raised above the boil by applying pressure. Further tests show that the time necessary for fixing dyestuffs by steaming can be shortened by raising the temperature. A pressure steamer was constructed which makes it possible to steam at a temperature of 248°F material passing continuously through.

With such equipment it is possible to apply substantive dye continuously, without need of long steaming times. Various tests show that it is also possible to apply dispersed, acid and premetallized dyestuffs to various synthetic fibers and blends. Such equipment is currently used in Europe to dye ribbons and tapes.

There is also in existence a prototype of a bulk machine for normal width goods which is at the moment being tested in bulk production. The paper is illustrated with various graphs and projections of color pictures of different dyeing tests.

In his concluding summary of his paper, the author had this to say: "Our trials have shown that it is possible to dye continuously cellulose and synthetic fibers by steaming at increased pressure with saturated steam. Since the required steaming times are comparatively short, a continuous procedure can be worked out without difficulty. However, it must be taken into account that certain dyes give poorer yields

on pressure steaming, this being due at least in part to the better penetration of the fiber. In spite of this I am convinced that this disadvantage is more than outweighed by the higher level of productivity and the saving power and labor. A continuous dyeing range of this kind should be particularly suitable for plants which handle big yardages and concentrate on a few shades. Where and when such a dyeing range can be employed for successful commercial production will depend largely on local conditions and will have to be studied carefully in each case.

"In conclusion I want to mention that all the trials I have described were carried out on a laboratory scale. We have been able to run some practical trials which have corroborated our findings, so that the results should be generally valid."

Reducing the Felting Shrinkage of Wool

Fred H. Steiger,
Rohm & Haas Co.

RELAXATION, consolidation, and felting shrinkage of wool are differentiated. The influence of washing conditions on the degree of felting shrinkage is discussed.

More than 250 published methods for reducing or eliminating the felting of wool are classified according to chemical type. The mode of action and the accompanying side effects of these groups are considered. In particular the characteristics of wool treated by additive processes and degradative processes are discussed.

The results of an investigation into the stabilization of wool by the application of an acrylic copolymer which can be thermoset on the fabric are presented. In particular the influence on the total stabilization of factors such as fabric pretreatment, polymer hardness, the quantity of thermosetting material employed in the finish, the curing conditions, and the mechanical handling during the treatment is discussed. Finally, the properties of fabric made felt-proof by a chlorination process and by treatment with an acrylic copolymer are contrasted in detail.

Rovana—Versatile New Textile Yarn

Charles R. Sheehan,
The Dow Chemical Co.

ROVANA SARAN MICRO-TAPE is a thermoplastic material having a softening range of 310-320°F and melting at 340-350°F. When softened, the flow properties of Rovana allow fabrics to be heat shaped, sealed thermally, and molded. In addition, it can be raised to its melting temperature by commonly used dielectric heat sealing frequencies. Thus fabrics of Rovana possess the capability of being commercially dielectrically heat sealed.

The moisture regain of Rovana is less than one percent; however, even with this low regain, electrical charges rapidly dissipate resulting in less static than many other synthetic textiles. The basic vinylidene chloride copolymer composition imparts excellent resistance to flammability. Rovana does not burn, will not support combustion and retards burning when properly combined with other yarns. This composition also results in high resistance to outdoor exposure, mildew, rot and to most commonly used chemicals with the exception of those that are strongly basic.

A wide spectrum of solution-dyed colors, including white, are available. These new Rovana saran micro-tape colors have excellent fastness to light and weathering. The majority of these colors withstand Fade-Ometer exposure of 200 to 320 hours and Weather-Ometer exposure of 160 hours. Outdoor or direct weathering exposures, while not complete, are very good through 100 hours exposure. Laundering and dry cleaning fastness of these colors are also excellent.

Tone-on-tone, union and cross-dyed styles are also possible when either white or pigmented Rovana is combined with other textile yarns. Direct, acid, or vat dyestuffs may be applied to other component(s) to obtain these effects. Selected dyestuffs ensure proper shade control and maximum light stability.

Normally, dyeing of white Rovana is not recommended. However, in those applications which do not require stringent lightfastness properties, dispersed acetate or cationic dyestuffs may be employed. Build-up of these dyes is limited to medium shades with lightfastness of 5-15 hours.

Fabrics of Rovana may be printed with resin-bonded pigments, both water-in-oil and oil-in-water types, using reactive binders that can be cured at 200°F for 5 minutes. Colorfastness properties are similar to these pigments when applied on other textiles using these low temperature curing systems.

New Colors in Solution-Dyed Kodel

Solution-dyed colors in Kodel polyester fiber have been introduced commercially by Eastman Chemical Products, Inc., producer of Kodel. The colors are navy and brown which augment solution-dyed black Kodel recently offered by Eastman. According to the company, solution-dyed Kodel permits unique color effects in polyester fibers and offers built-in uniformity of color and color fastness that cannot be achieved by any other method of dyeing polyester fibers.

The deep penetration of solution-dyed Kodel is also said to make it impervious to all finishing processes such as the use of bleaching agents or other chemical solvents that normally affect colors. The new solution-dyed Kodel colors will be produced in 3 denier staple and tow, at \$1.86 a pound for Brown and \$1.96 for Navy. Solution-dyed Black Kodel is available in 2.25 and 3 denier staple and tow at \$1.76 a pound.

Knitting Show Shaping Up

Two hundred firms will display their new products and inventions at the 45th biennial Knitting Arts Exhibition at Convention Hall, Atlantic City, N.J., on April 24-28, 1961. Reservations for display space for the April show already exceed last year's total. The show is jointly sponsored by the National Association of Hosiery Manufacturers, the Underwear Institute, and the National Knitted Outerwear Association. It is billed as the world's largest knitting show.

Among the exhibitors will be 23 Philadelphia, Pa., firms, including: American Aniline & Extract Co., Inc.; American Viscose Corp.; Etherington Brothers, Inc.; W. F. Fancourt Co.; Fletcher Works, Inc.; Franklin Process Co.; Globe Dye Works Co.; H. C. Harding, Inc.; Klauder Weldon Giles Machine Co.; Joseph Klumpp Co.; Laurel Soap Manufacturing Co., Inc.; Leatex Chemical Co.; Clarence L. Meyers & Co.; L. P. Muller & Co.; Ordnance Gauge Co.; Pharr Worsted Mills, Inc.; Philadelphia Metal Drying Form, Inc.; Scholler Bros., Inc.; Singer-Fidelity, Inc.; Soabar Co.; John F. Street Co.; E. W. Twitchell, Inc., and Venango Engineering Co.

Status of Nonwoven Fabrics in the Textile Trade

Howard E. Shearer,
American Viscose Corp.

WHILE SOME of the glamorous publicity given to, but not enjoyed by, nonwovens in the late 1950's has subsided, this material continues to make itself better known and appreciated for its true value in the textile trade. A reappraisal of this material by its manufacturers and consumers has brought about an overall retrenchment. Some manufacturers have deemed it expedient to withdraw. Others have been equally quick to take up the slack and increase their efforts through improved production facilities and methods of merchandising.

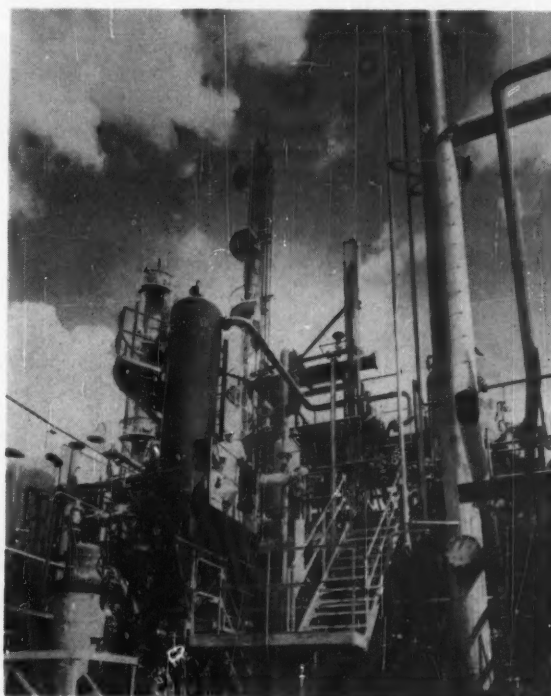
It is pointed out how these changes have been accompanied by major shifts in key personnel; the development of new adhesives and fiber descriptions; the introduction of improved machines for forming and bonding the web, and the expansion of manufacturer-distributor relationships. It is indicated that while research and development of new products is receiving less emphasis than the sale of existing production, these nevertheless continue to move forward at a gratifying rate.

A concluding group of summaries of papers presented at the AATCC Convention will be published in next month's issue.

New Celanese Plant

Celanese Corp. of America is constructing the nation's first full scale commercial facilities for producing 1,3-butylene glycol, a chemical used by the plastics, automobile, electrical and other industries for making a wide range of consumer and industrial products. The multi-million dollar unit at Bishop, Texas, will have an annual capacity for producing 25 million pounds of the chemical by a new process developed by Celanese. Celanese is the sole U.S. producer of 1,3-butylene glycol. The new plant is expected to be completed during the 1961 first quarter.

CLOUD-CAPPED TOWERS—Semi-works unit at Bishop, Texas for current output of butylene glycol by Celanese.



New Things at Greenville

(Continued from Page 34)

As at Saco-Lowell, Whitin and Roberts, spinning frame changeovers were a highlight of the show. **Dixon Corp.**, for example, had its new Cavalla Roth drafting on display, consisting of a specially shaped apron nose-bar couple with a spring tensioning system for the lower apron. The top arm has nothing extending below the steel rolls.

Cole Engineering showed its Phantom drafting system which is available as a top roll conversion allowing retention of existing roll stands and steel rolls or as a complete conversion from roller beam up.

A new spinning frame builder was shown for the first time by **Southern Machinery Co.** Called the "Bild-O-Matic", the unit can be put on all existing frames with a minimum of trouble. A big advantage for mills running the automatic box loading devices for looms, such as the Draper unit, is that this new builder will put the necessary tip bunch right on the filling bobbin without additional winding. Also the "Bild-O-Matic" motion, even when not used for making a tip bunch, is said to build a tighter bobbin due to precise camming and more accurate lay of the yarn. This builder will soon be available to put a filling wind on a warp bobbin which should increase rewinding efficiency from 40% to 60%, according to the manufacturer.

Automatic doffing is one of the big developments of the future. Two doffers were in operation at Greenville and a third was announced. **Willcox & Gibbs Sewing Machine Co.**, which announced the "Treufus" automatic doffing machine last spring, had a demonstration unit operating for the first time. This doffer runs at 80 feet per minute and the approximate rate of doffing and replacement, after allowing for auxiliary operations such as handling full and empty bobbins, is around 6,000 to 8,000 bobbins per hour, depending, of course, upon the size of the package. The unit is mechanically actuated and manually operated so there are no electrical drives or wiring connections.

Running much the same as at Atlantic City was the Japanese **Kanegafuchi Auto-Doffer** which is capable of doffing upwards of 400 spindles in about two minutes. This unit is permanently attached to the

frame but the manufacturer states that a portable Japanese doffer may soon be on the market.

The latest entry is **Bahnson Co.** which announced at the Show that it would soon have its Doff-O-Matic on the market. This will be a self-propelled unit, electrically powered from a conductor on a frame-mounted guide rail. Both sides of a frame can be doffed at once. The machine will be about 57" high, 54" long and 16" wide. Bahnson estimates that the doffing speed will be between 100 and 200 bobbins per minute on one side of a frame, or a maximum of 400 for the entire frame.

Winding

Some of the most important developments took place in winding with three automatic cone winders in operation, two of them being shown for the first time. **Leesona Corp.** had its Uniconer running, having first introduced it at Atlantic City. With an automatic knitter on each head, it has very little down time. The Uniconer was winding a standard knitting cone at Greenville at about 1,100 yds. per minute, although its capacity is rated at 1,200 yds. per minute.

A pilot model of its Model 12-K automatic winder was just finished by **Abbott Machine Co.** in time to be shown at Greenville. Visitors were taken to Abbott's Southern Sales Offices for a demonstration and the unit attracted considerable attention. Winding speed on standard knitting cones is between 700 and 800 yds. per minute. However, with a grooved roll-type traverse, soon to be available, winding speeds will be increased to about 1,200 yds. per minute. If an end breaks, the yarn is automatically retied. If the yarn runs out or breaks on the bobbin, a new bobbin is tied in. Those winding units which go by the automatic head still winding, continue on through. The winding units make a complete cycle of the winder in about a minute, so the average length of time any spindle is not operating is less than a half a minute. The automatic head contains 30 bobbins, so an operator should be able to tend several winders.

Twelve winding units working with one automatic head and knot tier is believed by Abbott officials to be the most practical ratio of operation. Fewer winding units per machine would only increase the price per spindle, it was pointed out, while more winding units would reduce machine efficiency.

Terrell Machine Co. introduced the new **Schlafhorst Autoconer**. On this automatic winder, one knitter on a carriage patrols a section of 10 winding heads continuously with an efficiency of about 95%, according to the manufacturer. Knotting takes only 5 or 6 seconds. Each spindle operates independently so that different yarn counts, styles and colors can be handled at the same time. Maximum package size is 8 lbs. with 12" dia. The supply package holds between five and seven bobbins.

(Continued on Page 42)



INTERNATIONAL FLAVOR — Much foreign equipment, such as this Daiwa carding attachment from Japan, was on display

APEX

TECHNICAL SERVICE

A well equipped laboratory and properly trained staff are maintained, prepared to handle organic chemical analyses and syntheses.

All standard A.A.T.C.C. tests can be performed.

In addition, we can provide the following regular services and tests:

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- Flame Resistance
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- Light Fastness
- Microscopic Analysis
- Moisture Regain
- Scorch Resistance
- Shrinkage
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- Wash Fastness
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Pure white softeners with ready solubility in cold or hot water. Widely compatible. Non-chlorine retentive. Economical.

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Polyethylene softeners which work in hard water, give a soft feel and eliminate needle cutting.

FLAMEPROOFERS

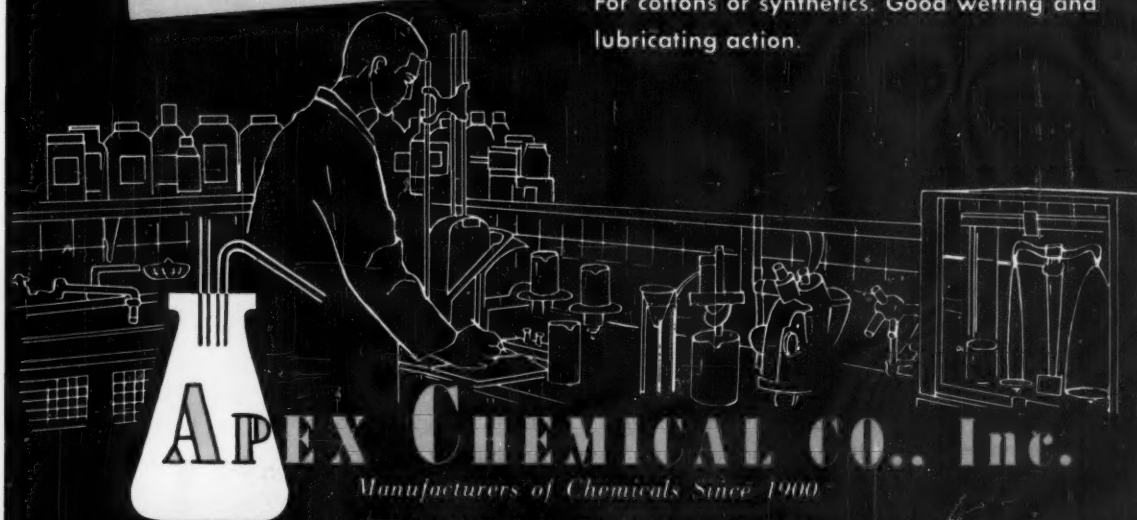
Special products to impart a soft hand and flameproofing properties on difficult blends as well as on natural fibers.

LUBRAPEXES

Coning and winding oils for natural, synthetic and rubber yarns.

PENTRAPEXES

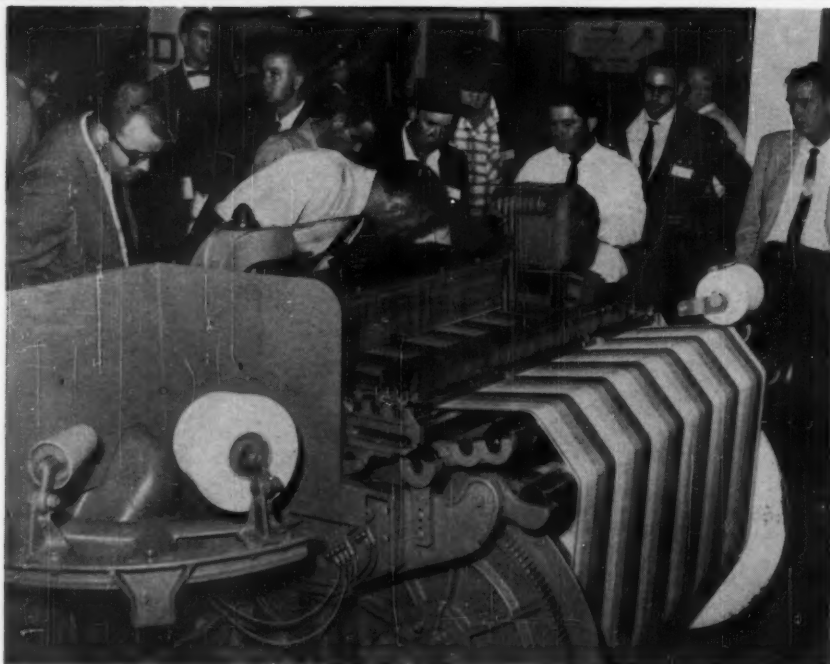
Low foaming dyeing and kier boil assistants. For cottons or synthetics. Good wetting and lubricating action.



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CURIOUS MILLMEN—Shown for the first time at Greenville, Draper's new shuttleless loom received intent and prolonged study from many visitors

WEAVING

Sharing with automatic doffers the distinction of drawing the biggest and most intent crowds were the looms on display at Greenville. **Draper Corp.** displayed for the first time at the Southern Textile Exhibition its DSL shuttleless loom. Two models were operated. The first was demonstrated weaving a 40-inch sports denim at a speed of 250 picks a minute. The second model was shown weaving a 46-inch gauze fabric at a deliberately slowed down speed of 33 picks a minute so that observers could note with ease the movement of the yarn carriers attached to steel tapes which are one of the significant mechanical features of this weaving machine.

The second shuttleless loom on display was the Maxbo loom, manufactured in the United States by **Southeastern Loom Works** and sold by **Edda International Corp.** Two models were demonstrated. One, a 48-inch machine, wove a Dacron-cotton cloth at 350 picks a minute. The second model turned out at 37½-inch cotton work clothes fabric at 330 picks a minute.

Crompton & Knowles Corp. demonstrated its C-7A push-button loom equipped with electronic controls which are said "to take skill from the operator and put it in the loom." Among the advantages of the electronic controls are said to be reduction of operator fatigue in that push-button controls permit easy stopping and back-up. A spokesman for the company reported that more than 1,000 C-7 looms have been sold since the 1958 Greenville show, and that every customer who ordered these looms had placed re-orders. It was explained that the C-7A loom is basically a C-7 loom with the necessary refinements to fulfill the needs of a high speed loom to weave midweight or lightweight worsted or blended suitings and other fabrics such as upholstery cloths and drapery fabrics.

LABOR SAVER—Among outstanding labor-saving equipment on display were Barber-Colman warp tying and warp drawing-in machines

Among the items featured in the display of **Steel Heddle Mfg. Co.** was this firm's new Stehedco Slasher Break-Out Preventer, a device said to stop costly slasher break-outs from tangles and snarls. It is usable on a wide range of warp yarns and numbers. It works in the following fashion: an inverted comb is inserted in the yarn sheet so that when a tangle or snarl of yarn reaches the inverted comb, the comb is pivoted forward to activate a switch which automatically drops the slasher into slow speed. The device is said to be simple and economical and can be applied by a mill's electrical department in little time. Also featured in the Steel Heddle display was the firm's new reed and harness frame for the Draper DSL loom.

Warp Preparation

Demonstrated by **Barber-Colman Co.** was its warp drawing-in machine said to offer these advantages: quick replacement of warps in changing patterns, making the machine useful for short runs and sample warps as well as for handling style changes quickly. The machine replaces drawing-in hands at a ratio of six hands to one machine operator. Also shown by Barber-Colman were its Model 56" MC portable warp tying machine, and its Model 15" LC portable warp tying machine.

(Continued on Page 44)



NOW...KODEL IN BROWN AND NAVY



**NEVER
BEFORE...
SOLUTION-DYED
COLORS IN A
POLYESTER**

From the pioneer in solution-dyed acetate comes a major pioneering step in polyester fibers. Eastman, after announcing Kodel in black a few months ago, now brings you Kodel in brown and navy. For the first time you can get indestructible color-fastness in a polyester fiber. The new navy and brown have proved many times as fast as colors dyed by any other method known. And the styling possibilities are even more challenging! With solution-dyed colors you can get more dimension, more patterns, more color effects than ever before. If your field is woolen, worsted, rayon or cotton blends, this is a development you won't want to miss. And solution-dyed Kodel is in commercial production now!

Kodel is the trademark for Eastman polyester fiber



EASTMAN CHEMICAL PRODUCTS, INC., SUBSIDIARY OF EASTMAN KODAK COMPANY, 260 MADISON AVENUE, NEW YORK 16, N. Y.

Cocker Machine and Foundry Co. showed for the first time its new cloth folder which has among its advantages less moving parts and the need for less floor space. Also displayed by Cocker was a new slasher featuring a simple, quiet drive and easy accessibility to the bottom cylinders, and the firm's new Model AD 601 Section beam warper equipped with automatic hydraulic doffing and chucking.

Fletcher Industries demonstrated its Master Duplex Doubler Twister which twists up to eight ends at speeds up to 9,000 revolutions a minute. The machine is equipped with new special feed roll attachments for making novelty yarns of glass, nylon and other synthetic and natural fibers. Also on display was the five-pound package Fletcher Jumbo Duplex Doubler Twister, and the new Multi-Fab high speed automatic loom for narrow fabrics. The loom operates at 300 picks a minute for light and medium fabrics, ribbons, tapes and elastics.

Auxiliary Equipment

Foster Machine Co. displayed the new Lindly Ultra Yarn Inspector which is a completely redesigned and fully transistorized successor to the Lindly Model "B" and Series 600 Multicontrol units which have been in use for more than five years. The fact that it is equipped with transistors is said to give the device greater stability, longer life, less maintenance and less power consumption. Also on display was the new Lindly Dyna-Micro-Gage, a compact, highly sensitive unit for measuring minute changes of light.

Herr Manufacturing Co. displayed its line of the latest type "M" conical rings which provide better oil distribution by means of capillary action to seams in the surfaces on which the traveler rides. This feature is said to provide a more uniform oil distribution resulting in cleaner yarn, faster operation, reduced yarn breakage and oil consumption.

Heany Industrial Ceramics Corp. in its display placed special emphasis on its Heanium drop wire for use on the Barber-Colman warper, and its No. RLC-U

Heanium Gate Tension equipped with contact fingers for use on Leeson cone winders. Advantages of the Gate Tension are said to be better quality yarn, better package formation, better overall controlled tension let-off and a constant multiplication factor.

Mitchell-Bissell Co. had a booth devoted to its textile thread guides including its chromium plated wire guides, porcelain and ceramic guides. Advantages of its chromium plated guides, a spokesman stated, are maximum density hardness and uniformity. Also featured in the display were the firm's "Blue Satin Finish" guides said to be highly resistant to thread wear.

American Lava Corp., in a broad display of electrically conductive thread guides, placed emphasis on its AlSiMag 193 guides which are said to help control static electricity and thus produce better quality yarn. Stock designs are available for most equipment while custom made guides can be furnished for special requirements.

Uster Corp. demonstrated a new concept in slub-catching provided by the Uster Spectromatic which is said to remove up to 95% of slubs in winding. The device can be set from a central control position, automatically compensating for size variations in yarn and assuring the mill of the elimination of defects which should be removed. At the same time, the device permits of electronic discrimination so that certain defects are allowed to pass when the knot would be more serious than the defect.

Garland Manufacturing Co. had a varied display of its plastic and rawhide loom pickers, plastic lug straps and sweepsticks and loom accessories. Highlighted in this display was the Garland plastic loom picker of high molecular weight polyethylene said to possess exceptionally long wear life and efficiency.

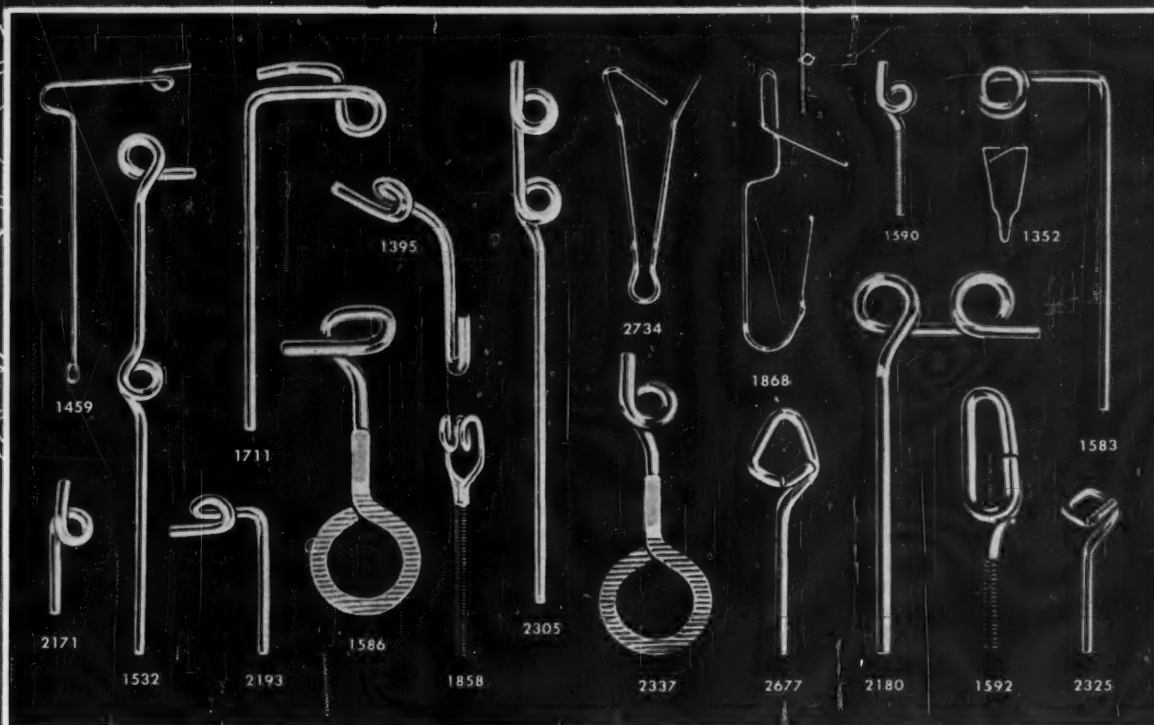
Howard Bros. exhibited its card clothing for woolen, worsted, cotton, asbestos and manmade fibers with special emphasis on the firm's HB wire for cotton cards. Advantages of HB wire are said to be an extended grinding cycle to as much as 90 days com-



CUSTOMERS ARE ALWAYS WELCOME—A friendly chat in progress at the display of card clothing of Howard Bros.

(Continued on Page 46)

MACHINERY and EQUIPMENT SECTION



What a *Difference* ... in **MITCHELL-BISSELL** **CHROMIUM-PLATED THREAD GUIDES**

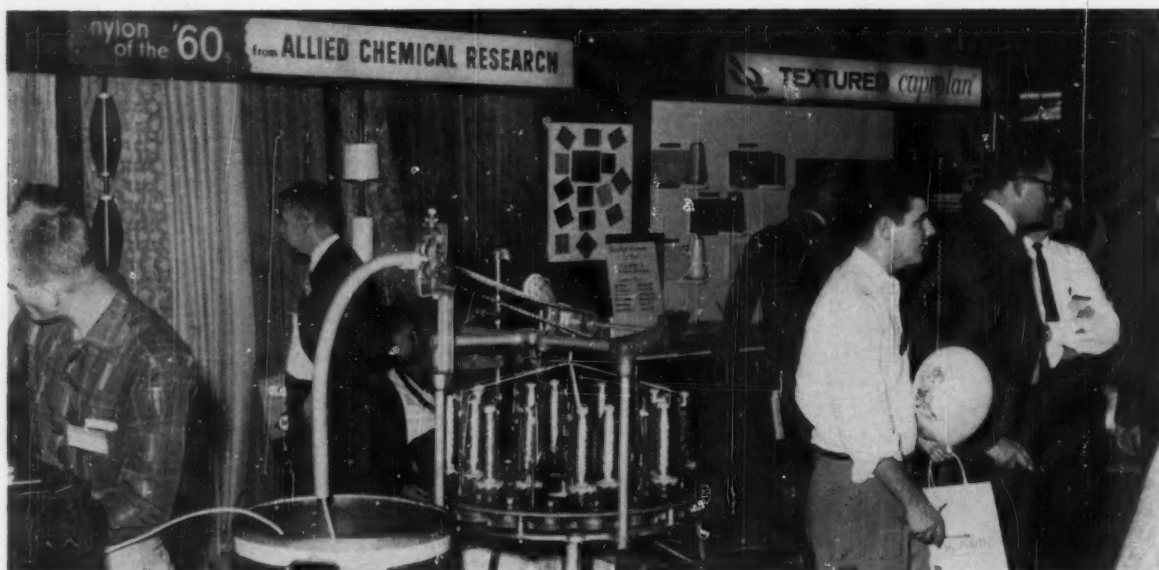
Special care is employed in the plating of Mitchell-Bissell Chromium Plated Steel Wire Guides to assure maximum density, hardness and uniformity. Our methods of fabricating and polishing develop a surface smoothness far beyond usual commercial standards. Because of their superior resistance to thread wear, these guides have proven ideal for processing all modern synthetic fibre yarns and blends. More than 3,000 patterns. Special patterns to your specifications. Can be supplied in mirror, satin or matte finish. Samples and Catalogs on request.

"PERFECTION" GRADE. Guides are available to meet conditions demanding finish and plating well beyond the usual standards. These are truly premium guides, representing the ultimate in wire thread guide plating.



MITCHELL-BISSELL CO.
TRENTON, NEW JERSEY

Southern Representative: HOLT ASSOCIATES, INC., Greensboro, N. C.



NYLON CORD WHILE YOU WAIT—The display of Allied Chemical Corp. was enlivened by a braiding machine running Allied's Caprolan nylon

pared with the normal cycle which is much more frequent. Also featured was the firm's clothing for the first breaker cylinder on carpet yarn cards. The wire used is piano wire which is said to be longer lasting. One mill is reported to have used the Howard Bros. piano wire for three years of continuous operation without servicing except for grinding once each year contrasted with three months' cycle for ordinary clothing.

Marshall & Williams displayed a newly designed tenter specially intended for cloth room handling

problems along with its line of repair parts for tenters, tenter clips and edge guide controls.

Van Vlaanderen Machine Co., exhibiting at Greenville for the first time, displayed its Style 500 heavy duty high speed tenter frame. Used for all types of fabrics from sheers to ducks, the frame operates at speeds up to 250 yards a minute. It is equipped with bevel gears which are more efficient and cooler than conventional worm gears. Another feature of the machine is its cast iron lathe type bed on the main drive section.

Fortrel Introduced to Retailers

Celanese Corp. of America, between October 24 and November 2, introduced its new polyester fiber, Fortrel, to some 10,000 executives of the nation's leading retail stores in 34 major cities. The introduction was made via 45-minute programs over big-screen, closed-circuit color television. The retailers were told about Fortrel and Celanese Corp.'s plans to advertise and promote the fiber, which will be introduced to consumers in women's, men's and children's apparel in the 1961 first quarter.

Fabrics and apparel containing Fortrel were shown and modeled on the program. Since first produced several months ago, Fortrel has been woven by major mills into a wide variety of fabrics, principally blends with cotton, rayon and Arnel triacetate. Tests are reported to have shown Fortrel contributes wrinkle resistance, crease retention and ease-of-care properties to fabrics as well as affording unusual fabric and apparel styling possibilities.

The polyester fiber is produced at a new plant in Shelby, N.C., of Fiber Industries, Inc., which is jointly owned by Celanese and Imperial Chemical Industries of Great Britain. The synthetic fiber was developed in 1941 in the Calico Printers' Association, laboratories. Imperial Chemical subsequently obtained rights to manufacture and sell the fiber in all parts of the world except the United States and for more than 10 years has been marketing it under the trademark "Terylene."

New Du Pont Nonwoven Process

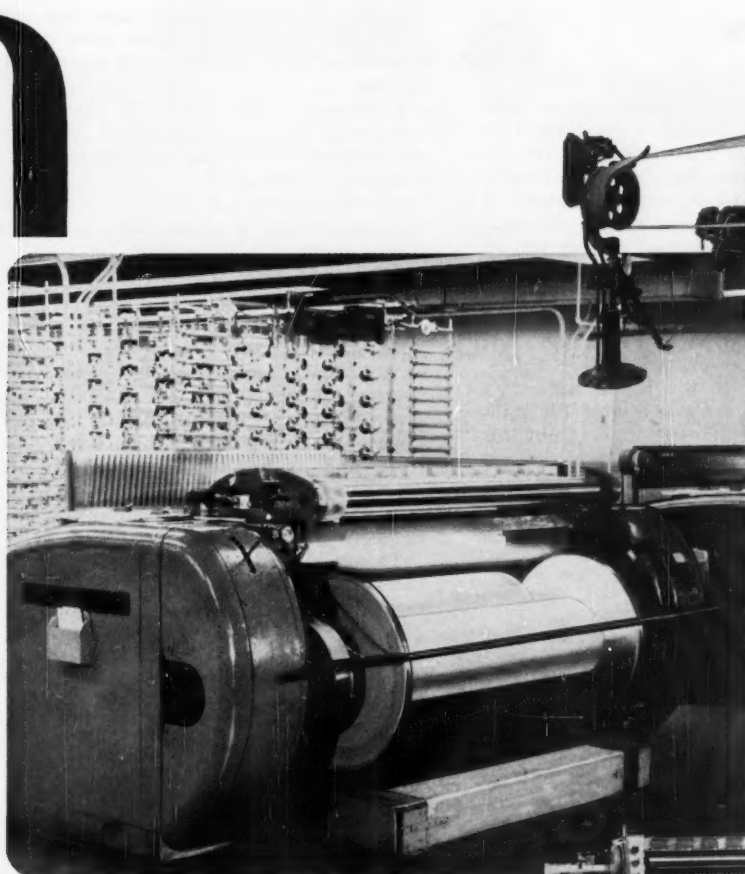
A new process for manufacturing nonwoven fabrics on paper-making equipment was announced recently by the Du Pont Co. Essential to the process are new synthetic fibrous particles developed by the company. Du Pont announced also that it had coined a name—fibril—for the new fibrous form of synthetic polymeric material, and has dedicated the word to the public as a generic term.

Another generic word—textryl—has been coined and dedicated to describe the nonwoven structures which may be manufactured through use of fibrils. Du Pont will produce and sell fibrils in experimental quantities at present. Prices of the new materials were not disclosed. Textryls may be manufactured on conventional paper making machinery, although modifications may be required, depending on the type of equipment in use.

The new structures may be produced in a variety of weights and textures, and are usable in applications presently employing either paper or certain types of textiles. Textryls may be printed, dyed, and embossed. Fabrication techniques used in the apparel industry may be applied to some of the new structures.

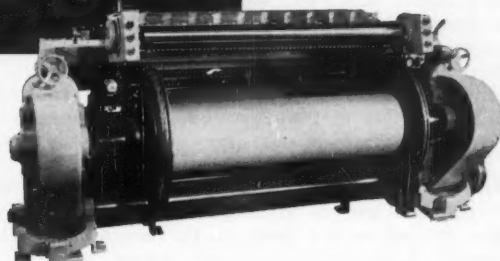
Development of the technology involved in using fibrils to manufacture textryls was described in a paper presented by Dr. Robert A. A. Hentschel at a meeting of the Technical Association of the Pulp and Paper Industry in Syracuse, N. Y., on Oct. 17.

C



**760
Since
1950**

ocker

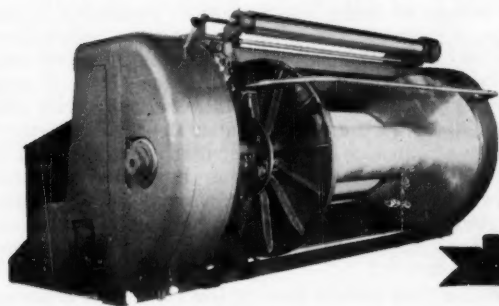


... has installed over 760 warpers since 1950—approximately three times the volume of the next leading make. Speed, flexibility, economy, and many valuable exclusive features account for this outstanding popularity—from finest deniers to heaviest tire cord yarns.

Accurately maintained air operated pressure produces beams of any desired density, from hardest beams for extra hours of weaving to soft beams for perfect dye penetration. Speed and braking are rheostat controlled from both ends to provide smooth operation and instant stops at all

speeds. Horizontal traverse on combs prevent channeling. Other features, such as air doffing, predetermining counter clocks, and electric speed indicators are standard on most models. Heavy construction practically eliminates vibration.

Whatever your warping requirements may be, there is a Cocker Machine which will do the job faster and better. Let us give you full information on the type you need.



Machine and Foundry Co., Gastonia, N. C.

WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE
WARP PREPARATORY EQUIPMENT

Gerald Tompkins

(Continued from Page 27)

When in 1939, the company started up its new rayon plant at Front Royal, Virginia, the largest in the United States, Tompkins was picked to run it. As a plant manager he earned a reputation for single-minded devotion to his job, for a wonderful sense of balanced reasonableness and discretion in his relations with the plant's workers, and of course, for an unmatched knowledge of the complex chemistry and industrial processes that go into making modern rayon.

In the strenuous days of the war effort, the new, up-to-the-minute Front Royal plant was largely devoted to production of one of the rayon industry's greatest triumphs—high tenacity tire cord for military uses. The success of the plant in turning out this essential ingredient for the ultimate victory of the United States and its allies was an achievement due, in no small measure, his longtime associates in the company insist, to Gerald Tompkins' sleepless efforts as plant manager.

Becomes General Manager

In 1947, when American Viscose was roaring along triumphantly with expanded and updated output to meet the hungry postwar demand for rayon tire cord and rayon textile yarns, Tompkins was given the bigger, tougher assignment of general manager of the viscose fibers division. In 1952, he was advanced still higher in company management by taking on the post of general manager of the entire fibers and film division, which included rayon and acetate yarns and fibers. In 1955, the board of directors chose him as president as the successor of Dr. Frank H. Reichel, who continued as chairman of the board.

The decade of the fifties, during which Tompkins has been active at the highest level of management of American Viscose, saw many new and expansionist moves by the company, now one of the giant corporations on the American industrial scene. Putting into practical use the investigation into non-cellulosic fibers carried on for years in its laboratories under Reichel's inspiration, American Viscose, in an equal partnership with Monsanto Chemical Co., set up a new big fiber producer, the Chemstrand Corp., to produce the first new acrylic fiber Acrilan; later, under license from Du Pont, Chemstrand moved into nylon. Many of American Viscose's skilled fiber and textile people went over to Chemstrand to help it in its rapid growth to become, in less than a decade, one of the major American producers of chemical textile fibers.

Last year, repeating the pattern set by Chemstrand, American Viscose joined with Sun Oil Co. to create another new producer of fiber and packaging films, AviSun Corp., whose specialty is polypropylene materials. In this venture, American Viscose contributes its technical knowledge in both manmade fibers and in cellophane film production while Sun Oil makes available its resources as a supplier of the olefin raw materials derived from Sun's basic product, petroleum.

Today, at this time of rayon's golden jubilee, and in fact the golden jubilee of the vastly important American manmade fibers industry, Gerald Tompkins expresses a serene and unshakable faith in the future of cellulosic fibers in textiles and an increasing range of additional applications. In his opinion,

cellulosic fibers in textile uses are poised on the threshold of a new era—one with even vaster horizons than that of rayon and acetate, but horizons leading to entirely new and radically different achievements than those of the older cellulose. American Viscose Corporation, he says, will decidedly remain in the cellulosic fibers business. And the company is prepared to lead the way into the new world of achievement that will be created by the new cellulosic fibers it, along with other rayon makers, is now tooling up to produce.

Faith in a New Fiber

Outstanding among these new cellulose, in Tompkins' opinion, are the high wet strength fibers such as American Viscose's Avril, known in its earlier experimental stages as Fiber 40. A cautious man, not given to unguarded enthusiasms or hasty statements, Tompkins grows enthusiastic when he talks about Avril and its textile properties. The fiber, he says, "is a duzy". He likes its overall property of performing in fabrics almost exactly like cotton, and, in some respects, better, Tompkins points out.

To explain his enthusiasm, he is apt to pull out a recent technical paper by two of his company's technical service men, I. H. Welch and W. S. Sollenberger, and show visitors the bald technical language in which these men describe the fiber's properties: "This fiber represents a whole new concept in cellulose chemistry in that it offers low elongation with dry yarn strengths 10% higher and wet strength 30% higher than regular rayon. These features complement Avril's inherent stability (equal to that of cotton), its resistance to caustic treatment, and its ability to accept compressive shrinkage." In these properties, Tompkins sees a fiber that has for its potential market that vast area of fiber consumption now held by cotton. In a word, he envisages a market of literally unlimited volume for Avril.

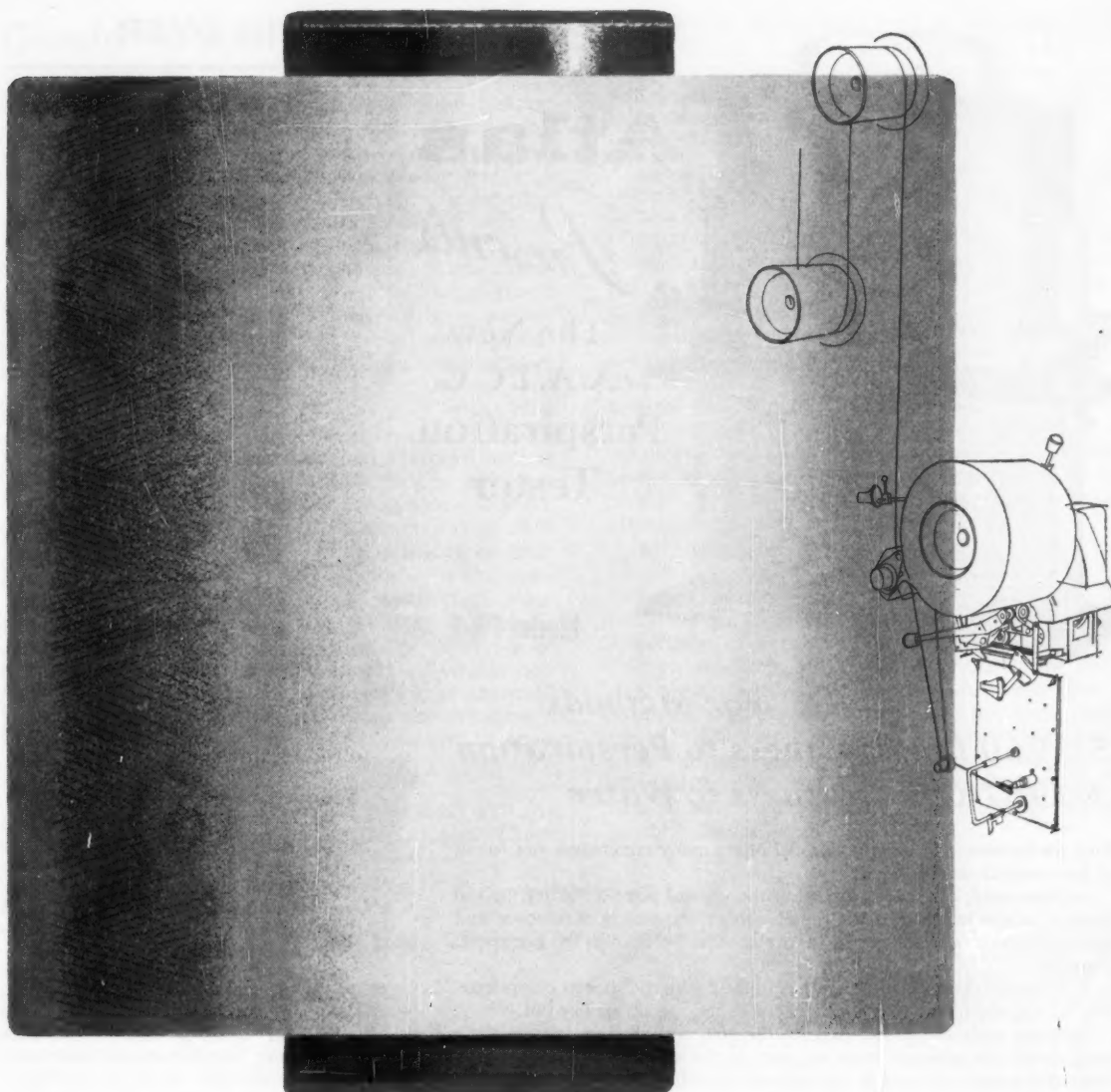
The All-Purpose Fibers

The promise of the high wet modulus cellulose confirms Tompkins' opinion that "cellulosic fibers will be better in the future." They are, he says, the all-purpose fibers, the only manmade fibers that are really comfortable, he believes; the only manmade fibers that can come close to the natural fibers cotton, wool and silk in this all-important factor. He does not, of course, underrate the polyamides, the acrylics, the polyesters and the other new non-cellulosic manmade fibers developed in recent years. Their success testifies, he readily admits, to their usefulness, their ability to bring new and wanted qualities to textile materials. "But", he adds, "these new fibers need the cellulose for blending to heighten the all-important comfort factor."

Perhaps no better summation of Tompkins' bullish point of view regarding the manmade cellulose fibers can be quoted than his own words in a talk he made at the company's annual meeting last May: "For the first 30 years, rayon and acetate were the *only* manmade fibers. In the 20 years since the second commercially practicable manmade fiber was introduced, rayon and acetate production has *increased* more than the entire output of all other synthetic fibers combined. Last year twice as much rayon and acetate was consumed in this country as all other synthetics put together."

While thus clearly making the point that American Viscose is as wholeheartedly in the textile business

(Continued on Page 51)



Investigate the superior quality of filament yarn produced with the Leesona 959 Take-up Machine. Electronic control maintains accurate constant yarn tension from spinning, drawing, extruding or treating...builds optimum density precision wound packages . . . the industry standard. Write Leesona Corporation, P. O. Box 1605, Providence 1, Rhode Island.





Atlas

Presents

The New A.A.T.C.C. Perspiration Tester

Model PR-1

For Methods

15-1960 Colorfastness to Perspiration

63-1957 Colorfastness to Water

This inexpensive and compact model offers many advantages not found in previously available equipment.

As illustrated, the unit is loaded in the vertical position. After the top plate is locked in place by the thumb screws, the weight is removed and the unit turned over on its back and placed in the oven in the horizontal position.

A 10 pound dead weight loading is utilized with the springs compensating for any shrinkage which may occur as the specimens dry out.

Separate units should be used for the acid and alkaline tests as there may be an interaction if both are used in the same unit. Where two or more units are to be used in one laboratory only one weight is needed.

Specifications

1 to 20 samples may be tested simultaneously

Weight of unit and plastic plates 5 lbs.

Dimensions 3" x 8" by 5 1/2" high
Stainless steel construction except for plastic plates and weight

Model PR-1 A.A.T.C.C. Perspiration Tester complete with 21 plastic plates but not including weight

\$34.00

P-9901 Weight only for PR-1 Perspiration Tester

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Weather-Ometer®
\$2755 up.

Fade-Ometer®
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Complete with supplies.

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\$875 complete with
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For the DYER

and FINISHER

Arnel-Cotton Dyeing

A successful method for the application of dyestuffs to textiles which combine Arnel with cotton has been developed by The Hellwig Dyeing Corp. The method employs Althouse Chemical Co.'s Azoanthrene Black Wan. The first step is the removal of the sizing from the Arnel and the starch from the cotton, to prevent the Arnel from becoming stained during the dyeing process and to eliminate retardation of the dyeing of the cotton.

Albert V. Morrell, Hellwig superintendent of plant production, said that he has never found it necessary to re-dye Arnel-cotton combinations if he has used the Althouse dyestuff. While the application of the black is the most recent development in this field, other color applications have been made, including Althouse Scarlet WYLC and Yellow EFC, both of which are light fast dyes, and Blue L, which is fast to light.

Sandoz Color Index

Use of the Sandoz Color Index is not yet widely known among the companies on which its salesmen call, according to a recent memorandum distributed by the Pigment Department of Sandoz, Inc. Sandoz is believed to be the first pigment manufacturer to include Color Index numbers in its descriptive literature to furnish the customer with a ready reference of all the accompanying technical data available on each pigment.

Expand Lanafast Group

Althouse Chemical Co. has added two new colors, Brown 4 RFL and Brown DBL, to its line of Lanafast pre-metallized dyes. The new dyestuffs are applicable to wool, nylon, Creslan, Zefran and Acrilan fabrics, as well as mixtures and combinations of these fibers. Exhaustive tests are said to have proven them to have good light and wet fastness properties.

New Warp Sizing Starch

Oxytrol, a warp sizing starch said to have two-thirds less biochemical oxygen demand (B.O.D.) than ordinary starch and nearly twice the effective weaving protection, is being marketed by the A. E. Staley Manufacturing Co. A granular, free-flowing, cold water swelling, chemically modified starch, Oxytrol can be used over a wide temperature range, from room temperature to boiling. It is mildly alkaline and desizes easily.

Gerald Tompkins

(Continued from Page 48)

today as it ever has been in its 50 year history, Tompkins is equally emphatic in stressing the company's determination to find markets for its yarns and fibers in areas other than fabrics. He has long been an energetic champion of research to discover new industrial uses for rayon, and an ardent believer that in such uses there may lie great profit. He has not forgotten rayon's spectacular sweep of the lucrative tire cord business in the years following World War II. For the cellulosic manmade fibers, he believes, there may be still undiscovered, equally profitable markets if the effort to find them is prolonged, skillful and diligent.

As proof of the fact that there is gold in the hills of industrial applications for rayon fibers, he is much taken up these days with American Viscose's newest rayon product and newest market. This is Avistrap, the company's strong, flexible and easy-to-handle packaging tape made of high tenacity rayon cord formed into a tape by means of an adhesive coating. The big market Avistrap aims to conquer is that now held by more expensive, harder-to-handle steel strapping. Tompkin's enthusiasm for Avistrap as a packaging tape is reinforced by the tape's performance as a binding material for 1,600 pound pallets of the company's own cellophane. The pallets so fastened have been moving for months from the company's plants to customers all over the country through conventional shipping channels. Their performance has been equal to steel tapes.

Avistrap is only one of the new industrial uses for its fibers for which Tompkins has high hopes. There

are others in the making such as the company's new rayon RD-101, a short multi-cell fiber with this interesting property: when formed into a wet-laid web and dried, these non-thermoplastic fibers firmly bond themselves and lock into place other fibers with which they are intermixed.

This property means that the RD-101 fibers can be used to produce wet-formed nonwoven fabrics and papers either in the 100% form, or in a blend with other fibers or pulp. Possible uses include backing for vinyl coatings, wall coverings, carbon and mimeograph papers, interliners, disposable diapers and many others.

Another new product yielded by the company's persistent research in cellulose chemistry is Avicel. This is a cellulose powder, odorless and tasteless and so pure that it has proven itself advantageous in contributing bulk, stability and palatability to a wide range of products. Among these are foods, drugs and cosmetics. In foods, Avicel is particularly promising as a low-calorie ingredient that can replace fattening starches and carbohydrates.

Developments such as these give support to the tempered optimism about the future of American Viscose Corp. and cellulosic products that is one of Gerald Tompkins' firmest convictions. As a man with a lifetime of experience in bringing the results of dogged research to profitable fruition, he believes that research will continue in the future to open new avenues to profit and growth for the huge corporation (15,000 employees, sales last year \$240 million) to whose interests he has devoted 41 arduous years of his life. And that research and the useful fruits thereof will be in the area of cellulose chemistry, he firmly believes.

"Dumping" of Rayon Staple Here Charged

Formal charges that rayon producers in 12 countries are "dumping" rayon staple fiber on the United States market were filed with the U.S. Treasury Department in October by the Rayon Staple Fiber Producers Association. The countries named in the complaint included Austria, Belgium, France, Germany, Italy, Japan, Sweden and Switzerland.

The simple "offer" of a price is sufficient under the Antidumping Act to establish "sales below fair value," on which antidumping charges are based. It is believed that foreign "offers" or "sales" at a delivered price below recently reported domestic prices of 28¢ are vulnerable to a finding of dumping and assessment of an antidumping duty under the Act.

European and Japanese rayon staple producers have expanded their capacity to promote exports and have poured such a volume into the United States market as to arouse determined reaction, a spokesman for the Producers Association said. In recent hearings before the Tariff Commission and the Committee for Reciprocity Information, domestic producers noted that domestic capacity is more than ample for total United States demand and called for a rollback of duty to 25% ad valorem under GATT Article 28. The possibility is also open for the initiation by the Tariff Commission of an escape clause proceeding.

The Association testified that foreign countries had built up approximately 1 billion pounds of excess capacity, or more than double the total of United States consumption last year. Major expansions in Austria and France, it was pointed out, appeared to be going forward despite substantial declines in their

own home market consumption between 1957 and 1959. France shipped 10% of its production to the United States last year and Austria 20%, some other European countries up to 40%. Japan has re-entered this market in substantial volume in 1960.

No other countries producing staple fiber are subjected to competition from imports in the magnitude faced here in the United States, the Association stated. In contrast to the 115 million pounds imported into this country in 1959, only 78 million pounds were imported into 25 other rayon and acetate staple producing countries. That amount was equal to 4% of their combined domestic production, whereas imports into this country were equal to 32% of United States production—a situation from which domestic producers declare they must have relief to survive.

Foster Veterans Honored

Sixty-nine active members of the Foster Machine Co. 25-Year Club welcomed four new members at its recent 13th annual dinner in Westfield, Mass. Veteran members of the club include Edward C. Connor, company president; Edwin H. Ely, southern sales representative, and Delmar H. Bennett and Lloyd K. Tague of the production department.

William C. Chisholm, who retired as president and treasurer of Foster Machine last March, was made an honorary member. During the meeting, at which Louis W. Doherty, chairman of the board, presided, six members who retired this year—Delmar H. Bennett, Francis J. Bolio, Harry M. Buzzee, Joseph E. Croteau, Rollin C. Mack, and Albert E. Tryon—were presented with gifts.

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NEW FABRICS

NEW YARNS

Tropical Worsted Blend

H. Daroff and Sons' line for spring and summer 1961 will feature an 8-ounce tropical worsted blend of 55% Creslan acrylic fiber and 45% wool, suitable for year-round wear. The fabric is porous, has a fine body and texture, and is highly wrinkle resistant, according to American Cyanamid Co., producer of Creslan.

Arrow Neckwear Line

Arrow Neckwear has introduced an extensive group of ties featuring woven fabrics of 60% Creslan acrylic fiber and 40% silk, the first time this new fiber has been used in cravats.

Curled Dynel Pile Fabric

A new curled pile knit fabric designed by Princeton Knitting Mills, Inc., a division of Burlington Industries, is being introduced this fall by leading sportswear and boot manufacturers. Produced in a natural off-white color, the fabric is knitted with a facing of 100% Dynel, Union Carbide Corp.'s modacrylic fiber, on a cotton backing. To achieve the curled face effect, Princeton developed wholly new finishing equipment. Dynel's thermopliability, or receptiveness to heat, is utilized in heat-setting the curls on the face of the fabric.

Double-Knit Jersey

A wash-and-wear, double-knit jersey fabric is now available in Milliken's 70% Acrilan fiber-30% wool blend for women's coats, suits and dresses, according to The Chemstrand Corp. Imported machines now permit full commercial production here of the double-knit fabrics, which previously also were imported. The Acrilan-wool fabric is available in a complete range of yarn-dyed colors.

New Use of Estron '55'

A new use of Eastman Estron "55" acetate yarn is said to give the acetate fabrics made from it the hand of silk and good suppleness. Belding Corticelli has introduced the new fabric, "10 East," in a wide range of prints in various color combinations and patterns. The fabric is woven by Iselin-Jefferson Co. entirely of Eastman acetate and features Estron "55" in the warp. Another feature of the fabric is said to be its permanent pleat retention in dry cleaning.

Maharam Saranspun Prints

Saranspun fabric has been included by Maharam Fabric Corp. in its new print catalog for decorators, architects and designers. The Saranspun fabrics are flameproof, and are said to have good flex-life, draping characteristics and dimensional stability.

100% Creslan Blanket

Pepperell Manufacturing Co. is introducing the Lady Pepperell Classic, a blanket of 100% Creslan acrylic fiber. The 72 by 90-inch blanket is being offered in six colors. It marks the first brand-name introduction of a blanket made with American Cyanamid Co.'s new acrylic fiber. The Lady Pepperell line, a winter-weight blanket with 7-in nylon binding, features rich texture, deep nap and color which are retained through repeated washings and long wear, the company reported.



NEWS AND COMMENT

TDI Dinner-Dance Heavily Attended

On Nov. 10, 500 members of the manmade and natural fiber fabric industry and their wives attended the 22nd annual formal dinner-dance of the Textile Distributors Institute, Inc., at the Plaza Hotel in New York City. Included were members of the Institute, mill and yarn interests, factors, bankers, brokers, dyers and printers.

The dinner-dance began with a smorgasbord cocktail party in the Terrace Room at 7 P.M., followed by candlelight dinner and dancing in the Grand Ballroom.

The Ecu and Bronze Gold Colorings of the Tiffany invitation were carried out in the floral arrangements and decorations, as well as in the pocket-size combination menu and seating list. TDI emblem, palms, trellis arrangement and cybotium ferns formed the background.

Music by Mark Towers Orchestra was under the direction of Stuart Allen. Musical numbers from the show of the TDI Golf Tournament were also enjoyed. Dinner opened with the playing of "Hail to the TDI", the Institute's theme song.

A. J. Wullschleger, chairman of the dinner committee, welcomed the guests and introduced Irving Roaman of Reliable Textile Co., TDI president elect, who presented Nat Leavy of Goldstein & Leavy, retiring president and chairman of the board elect with a gold Piaget wrist watch and an illuminated framed scroll with the following inscription:

This scroll is presented to Nat Leavy, chairman of the board, by his fellow directors and members in grateful recognition and appreciation of his dedicated services as president and vice-president of the Textile Distributors Institute, Inc.—1946-1960.

Immediately following the presentation, Stuart Allen sang the lyric, "Mr. Leavy", to the tune of "Pretty Baby" as a personal tribute to Nat Leavy. The lyric was prepared by Bud Schlesinger, Chemstrand Corp.

The dinner committee included George Greenspan, The Cantor-Greenspan Co., Inc.; Jack Litwack, New England Textile Co., Inc.; Richard A. Roaman, Reliable Textile Co., Inc.; Milton M. Schottland, Schottland Textile Mills, Inc.; Samuel Schwartz, Cadillac Textiles Inc.; Jack H. Simon, Blue-Simon Corp.; and Charles D. Wenrich, Du Pont Co.

Conflicting Views on "Piracy" Laws

With regard to the interest of many elements within the textile industry to obtain new legislation to protect textile designs from unauthorized copying, the Textile Distributors Institute has issued the following bulletin:

Two conflicting positions of different governmental agencies concerning this legislation recently were released. The Justice Department has taken the position that the proposed legislation raised certain ques-

tions concerning the creation of monopolies and might also indirectly affect the term of existing "copyright monopolies".

The Justice Department's position also was that they were unaware of any justification requiring broadening of the existing laws in the design patent and copyright field and also suggest that certain constitutional rules might be involved. The Justice Department concluded that it was unable to recommend enactment of design piracy legislation and preferred to study the matter further.

As distinguished from the Justice Department's position, the Commerce Department took an opposite stand. The Commerce Department stated that in its opinion new legislation in the field of protecting creators of original ornamental designs is "warranted and desirable" and that it agreed with the Patent Office's position which generally was favorable toward the proposed legislation.

Recent Labeling Law Developments

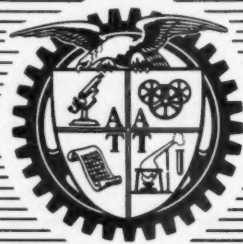
Representatives of the Federal Trade Commission have announced informally that they will undertake conferences and public hearings looking to amendment of the Wool Products Labeling Act Rules to bring them in closer conformity to the Textile Fiber Products Identification Act and Rules.

The Commission apparently feels that there are certain discrepancies and difficulties resulting from the fact that any product now required to be labeled under the Wool Products Labeling Act need not comply with the requirements of the Textile Fiber Products Identification Act, even though such product contains synthetic fibers in addition to wool.

The Commission pointed out that under the Wool Products Labeling Rules, trademarks were being used without generic names and that other descriptions of fibers appeared instead of generic terms. They also indicated that in their opinion the Wool Products Labeling Rules required amendment in connection with requirements for attaching labels.

A Federal Trade Commission representative also stated that although no actions or violations had yet been brought by the Federal Trade Commission under the Textile Fiber Products Identification Act, the educational period was drawing to a close and the Commission might soon act to seek compliance with the new law. It was pointed out that there were certain omissions in the labeling of rugs and carpets, omission of fiber content percentage figures where ornamentation is disclosed, and incorrect labeling where certain unknown fibers were included in the product. It was also stated that where products are made of several layers, labels have failed to disclose the content of the various layers rather than just the outer layer and there have been certain violations in disclosing whether the product is imported or just the fabric or yarn. ■

PAPERS OF THE AMERICAN ASSOCIATION FOR TEXTILE TECHNOLOGY INC.[®]



AATT

Polyesters and modified rayons in lightweight fabrics

By Joseph H. Anderer

A CHANGE has been going on for the past few years in the way that we rayon producers are looking at our future in apparel and in our efforts to expand rayon's share of these markets. Certainly in markets as important as these are to us and which are undergoing the tremendous changes which we are witnessing, we have opportunities and problems and we could not afford to be idle.

Our approach today is to search for uses which permit rayon to be engineered to do a specific job better than it is being done with existing fibers. In many cases this has meant a shift from 100% regular rayon fabrics to carefully chosen blends of tailored rayons with synthetic or natural fibers coupled with new approaches to fabric finishing. We have not limited our attention to the traditional rayon fabrics but have tackled some markets which have been closed to us in the past with results which we feel sure will become commercially important in the near future.

As an example of this approach I would like to discuss an end use which has been most interesting since it is dominated by cotton—the dress shirt market. As a result of promising answers to the following questions we have had a strong incentive to tailor a rayon fiber for this market.

1) Are there important trends at work which offer opportunities? In this case the rapid rise of wash-and-wear looked like it could offer the basis for a fresh start.

2) Does rayon have a wash-and-wear advantage? We were familiar enough with the basic properties of resin finished cellulosic fabrics to conclude that rayon at this time would not offer a promotable advantage over cotton in the all-cellulosic dress shirt. However, we were impressed with the merits of the polyester/cotton fabrics and felt that polyfiber/cellulosic blends would grow to dominate this and other markets in time. In these blends we knew that regular rayon showed a significant improvement over cotton in au-

tomatic wash-and-wear. This had been amply demonstrated in our own laboratories and had been reported several times by others, especially by Du Pont researchers.

Recent papers which made reference to this include "Orlon Acrylic Fiber" by W. W. Heckert, Textile Research Journal, September 1957; another, "Empirical Relations of Crease Recovery and Time" by P. R. Wilkinson and H. E. Stanley, Textile Research Journal, August 1953; still another, "Engineering of Fabrics from Blends with Synthetic Fibers" by R. F. Hoffman and W. R. Peterson, Journal of the Textile Institute, August 1958; and a very recent one, "New Developments on Evaluating Wash-and-Wear Per-

Anderer is manager, new product development, technical service department, fibers division, American Viscose Corp. He joined the company in 1955 as leader of the viscose rayon staple fiber section of the research and development department. From 1947 to 1955 he was employed by the Atlantic Refining Co., Philadelphia, in various chemical engineering and supervisory posts. During this time, he held the position of associate professor at Drexel Institute of Technology, teaching evening classes in mechanical engineering. Anderer holds degrees of bachelor of science in both mechanical and industrial engineering from the Georgia Institute of Technology.



Joseph H. Anderer

Paper presented at the October 5, 1960 meeting of the American Association for Textile Technology at New York, N. Y.

formance" by James R. Bercaw, American Dyestuff Reporter, February 22, 1960.

While the exact mechanism for this behavior is not fully understood, it seemed to be related to fiber friction and to the fine structure of the fiber itself as it affects resilience under the short loading cycles encountered in tumble drying. This resilience prevents the formation of fine muss type wrinkles in the dryer which are characteristic of Dacron/cotton.

3) Can rayon contribute adequately to the other properties which are desirable—comfort, stability, strength, luster, cover, hand, etc.? We had some obvious advantages and problems, but fortunately we were not without resources because we quickly determined that the shape, swelling, and even the modulus of rayon could be changed without significantly affecting its important wash-and-wear advantage. With this flexibility we decided to take a hard look. In cooperation with several companies we examined blends of Dacron with the various rayons shown in Figure 1 which have emerged far enough from the test tube to be considered commercially available.

FIGURE 1
RAYON FAMILY

	Manufacturer's Trade Name	Outstanding Advantage Over Regular Rayon
Regular		
High Strength	Avron ¹ Narcon ²	Strength for fine count yarns
High Wet Modulus	Avril ¹ Zantrel ⁴ Moynel ³	Dimensional sta- bility, Firmness of hand
Cross Linked	Topel ³ Corval ³	Bulk and hand, Improved stabil- ity
Cellular	Avlin ¹	Crispness, Bulk

¹ American Viscose Corporation.

² North American Rayon Corporation.

³ Courtaulds (Alabama) Inc.

⁴ Hartford Fibers Company.

As you can see we are not without resources or competitors. The major types are indicated on the left, the manufacturers' trade names in the center column, and their main attributes on the right. We clearly no longer have a single rayon staple but rather a family of similar and yet specifically engineered cellulosic fibers. A closer look at the physical properties of these fibers will show why the differences exist and how they affect not only the fabric properties but the spinning, weaving, dyeing, and finishing characteristics.

A look at the conditioned stress/strain curves in Figure 2 reveals some important differences. These curves trace the way in which fibers yield when stretched at the rate of 60% per minute in air at 58% relative humidity and 75°F. The first parts of these curves are practically straight lines. It is in these regions that the fibers are showing elastic properties which determine their modulus. You can see that the high strength type follows the regular rayon

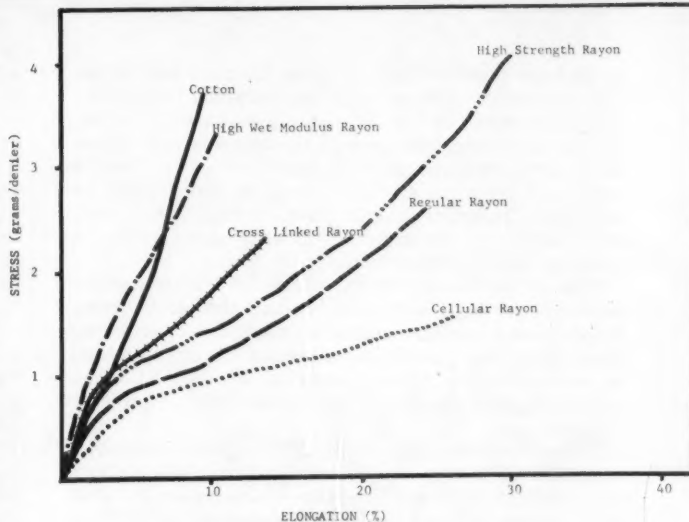


Figure 2—Single Fiber Properties—Conditioned

curve but at a little higher level. The higher strength is accompanied by higher elongation. Not only is the strength increased by about 30% but the toughness as represented by the area under the curve is increased by 30% as well. While many other factors play a roll in toughness such as fiber crystallinity and orientation, we find abrasion and fatigue tests bear out this general order of increase.

The increased strength and toughness find obvious applications in industrial fabrics and whenever strength is needed to extend spin limits or to provide adequate tensile strength in resin finished fabrics. Initially the toughness of these fibers presented manufacturing problems to the fiber producers because extreme care was needed in cutting and opening the tow in order to minimize long fibers and unopened locks. Tangled and overlength fibers do not break down as would be the case with weaker fibers, and neps result. The spinnability of these fibers has been steadily improved and they are well on their way to becoming an important commercial type.

The high wet modulus rayons, of course, are of interest primarily because they produce cottonlike dimensional stability, but this is not particularly related to the dry properties of the fibers. Their dry stiffness, however, is higher than other rayons and this is reflected in a slightly firmer fabric hand. They retain much of the fullness of the Dacron/regular rayon fabrics however, and do not produce a cotton firmness even though the stiffness is greater than cotton in the working region of the fiber.

Factors other than fiber stiffness have an important bearing on fabric hand and I would like to discuss this further when we look at the cross sectional shape of these fibers. Note that they have fairly good strength and pilot plant work indicates that we soon should be able to exceed 5.0 grams/denier commercially in this type. The area under the curve is less than with the high strength types and we find that fabric toughness and fatigue results confirm this. While their stiffness is greater, they can be plasticized by water to such an extent that fiber breakdown is not a problem during spinning and weaving. They should be handled, therefore, at humidity levels normally used for cotton.

The cellular rayon has a stress/strain curve which is lower than regular rayon and its strength is likewise lower, but this is not important since this fiber is intended to be used as a minor component of blends

to provide fabrics with a unique firmness and touch. The mechanism for this will be discussed later. Furthermore, most of the apparent low strength is due to non-uniformity in the wall thickness which causes weak spots. Individual fibers reinforce each other in yarn, and the yarn strength is higher than would be expected from the single fiber strength; however, care has to be exercised in opening and carding to avoid excessive breakdown.

The cross-linked rayons' curves are intermediate between the high wet modulus and the other types. In addition to a slight change of hand due to stiffness, these fibers can contribute fullness if the crimp which is reinforced by cross-linking is allowed to come into play. This is most evident in low twist, high bulk fabrics.

These stress/strain curves give a good indication of the strength that can be expected from blends. For instance, the high wet modulus fibers cooperate well with cotton or high modulus polyesters, while they do not contribute much to the strength of wool or acrylic blends.

And now for a consideration of the companion wet stress/strain properties in Figure 3. It is apparent that the wet stiffness of regular rayon differs more from cotton than does the dry stiffness, and herein lies the problem of dimensional stability. Fibers undergo wet stresses up to about 0.5 gram/denier in the course of warp sizing, fabric finishing and later, laundering. Cotton elongates only about 4% under this load, but most rayons elongate about 10%. The rearrangement is not permanent, however, since most of it is accomplished by distortion of the bonds between cellulose chains. These return to their original state if the fabric is wet out and relaxed. This recovery is a major cause of shrinkage.

If the total distortion is only 4%, as with cotton, it can be removed by compressive shrinkage processes such as Sanforization. If it reaches 10% then mechanical stabilization produces a very rubbery fabric and one that is easily distorted in subsequent laundering. In addition, higher stiffness greatly reduces the movement of fibers in the yarn which results in felting shrinkage—another source of dimensional instability. This, therefore, is the main justification for high wet modulus fibers—dimensional stability. However, other advantages are derived from their higher crystallinity and lower swelling which we shall consider later.

The high strength and cellular rayons differ little from regular rayon in wet stress/strain properties and as expected, their dimensional stability is likewise similar. The cross-linked fibers are again in the middle ground. The higher wet modulus produces

some improvement in stability, but the degree varies with fabric construction and method of laundering.

Another interesting difference among these rayons is in their cross sectional shape shown in Figure 4. These fibers differ dramatically in this respect. In the upper left is the high strength fiber with its smooth kidney bean shape. This shape produces a small increase in bulk by forming voids in the enfolding arms which average about 15% of the total volume. The cotton fiber is next on the left. It is elongated and this elongation spirals down the length of the fiber.

The really unusual cross section is the next fiber on the left, the cellular fiber and, in fact, this is its real claim to fame. Its slender, pliable cross section permits the fiber to entwine about other fibers in a blend and to restrict freedom of movement of these fibers to such an extent that a substantial increase in firmness is achieved. This is shown in the cross section view of a 65% Dacron/35% cellular rayon yarn in Figure 5.

In addition, the wall of this fiber is so thin and compliant that even the capillary attraction of withdrawing water will force adjacent fibers into close contact and create a substantial bond. While this bond can be broken by working the fabric, it is restored by rewetting and drying. Figure 6 clearly shows this behavior.

The bonding property can be increased considerably beyond that found in these textile fibers. The result is very unique fibers for the nonwoven and paper processes, but that is another story. Since the firmness comes from entwining and bonding, denier does not contribute in the usual way. In fact, 1.5 denier produces a firmer fabric than 3.0 denier because more fibers are available to entwine and their walls are more flexible.

The first fiber on the right in Figure 4, a cross-linked fiber, has a typical crimped rayon cross section. Its manufacture is similar to that of crimped rayon except for the cross-linking aftertreatment. The next fiber is regular rayon and the bottom fiber is the nearly circular high wet modulus fiber.

In summary, it is apparent that modulus is only one factor which contributes to fabric firmness. Shape and bonding can be even more powerful factors. This explains why the high wet modulus fibers whose stiffness is similar to that of cotton did not produce equivalent fabric firmness. They are relatively smooth and circular in contrast to the elongated spiralled structure of cotton.

Let us consider luster for a moment since it is another property which is related to fiber shape. The broad flat surfaces of the cellular fibers reflect light readily and produce a luster or glitter in darker shades. This can be suppressed by delustrants. In addition, the small voids produced by trapped gas bubbles in the high strength and high wet modulus fibers reflect light and, therefore, have a silk-like delustering effect similar to that obtained by delustering oils.

The last property which we shall examine is fiber swelling shown in Figure 7. Note that regular rayons swell much more than cotton and, therefore, have the well recognized advantages of excellent dyeability and high comfort value, but this also causes sensitivity to caustic and requires higher resin concentra-

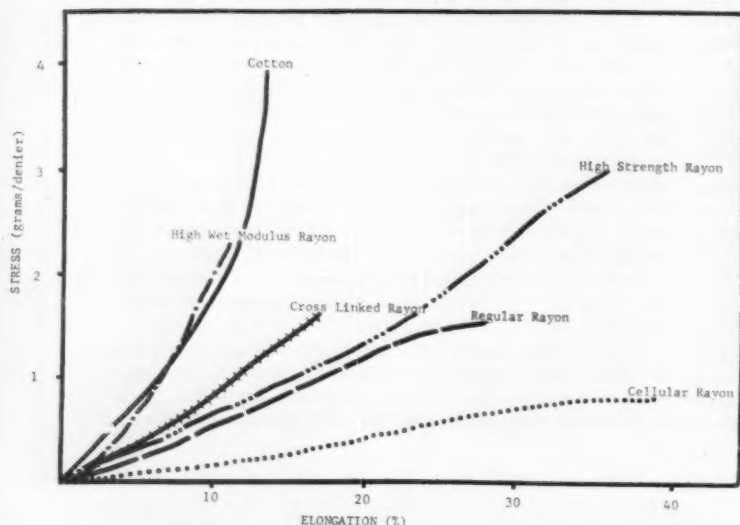
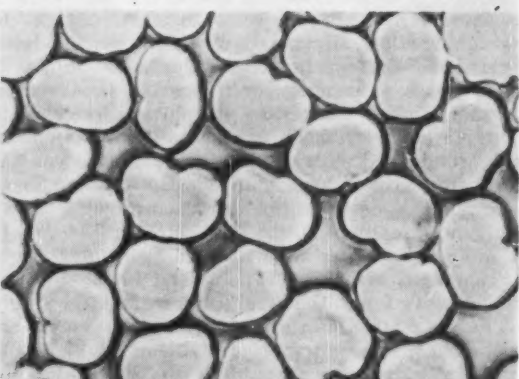
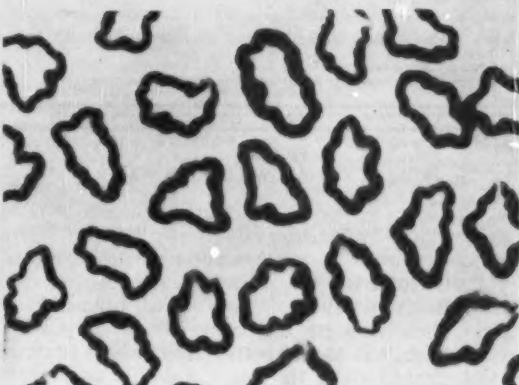
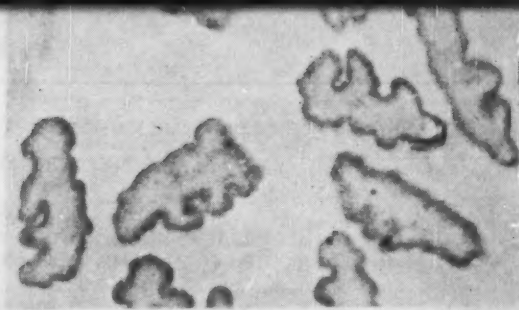


Figure 3—Single Fiber Properties—Wet



High Strength Rayon
Cotton
Cellular Rayon

Figure 4—Cross-Sectional Shapes

Cross-Linked Rayon
Regular Rayon
High Wet Modulus Rayon

tions for wash-and-wear. There is little swelling difference between regular rayon and the cellular or high strength types although the cellular fiber can hold vast amounts of water in the central void if the fiber is permitted to relax freely in water.

The high wet modulus fibers are lower in swelling. As a result the rate of dye pickup is slower. Slasher dyeing of warps is still possible but the dye concentration or residence time must be increased for the same depth of shade. The lower swelling permits package dyeing with vats although fine counts require modification of the wind. The amount of resin required for wash-and-wear fabrics is likewise a little less.

Resistance to caustic is increased to the point where these fabrics will withstand normal cotton mercerizing treatments with only a small strength loss with little increase in harshness. Mercerized fab-



Figure 5—Cross-Section of Dacron/Cellular Rayon Yarn

FIGURE 6
EFFECT OF DRYING METHOD ON FABRIC STIFFNESS¹

Blend Components	After Laundering ² and Drying		
	Line Dried	Tumble Dried	Tumble Dried & Pressed
100% Avlin* rayon	329	57	391
Polyester/Avlin rayon	70	62	74
Polyester/Regular rayon	39	33	40

¹ Fabric stiffness determined by the Cantilever Method, ASTM D1388-55T.

² Ten Norge launderings.

* Registered trademark of American Viscose Corporation.

FIGURE 7
CROSS SECTIONAL SWELLING IN WATER

Fiber	% Increase in Area
Cellular Rayon	80
Regular Rayon	80
High Strength Rayon	75
High Wet Modulus Rayon	55
Cross Linked Rayon	45
Cotton	30

rics show improved seam strength and resistance to fraying. Another advantage for high wet modulus fabrics is that in contrast to regular rayon they will hold a plissé pattern through repeated launderings. The cross-linked fibers are still lower in swelling and their behavior is similar to the above but even more pronounced with respect to dyeing and caustic.

Now for a closer consideration at the impact of the properties of these fibers and cotton in a blend with synthetic fibers.

For example, when they were carried into a 110 x 74 broadcloth with 65% Type 54 Dacron/35% cellulosic fiber, we found the results summarized in Figure 8. The aesthetic qualities of the cotton blend are generally considered to be acceptable although higher luster and better cover would be preferred in all the blends. The rayon blends showed greater resilience or fullness while cotton blends were at the opposite end of the scale with greater crispness. Our testing showed that preferences spanned this range. While a large group preferred cotton's crispness, an equally large group preferred the fullness of the rayon blends. One objective of the rayon blends, therefore, should be to expand the range of aesthetic properties available in a polyester cellulosic shirt and not merely to displace

Cellulosic Fiber	Resilience	Crispness	Cover	Luster	Strength	Tongue Tear	Abrasion Resistance	Pilling	Automatic W/W	Dimensional Stability	Comfort	Ironing Effort	Economics
	0	0	0	0	0	0	0	0	0	0	0	0	0
Cotton	0	0	0	0	0	0	0	0	0	0	0	0	0
Regular Rayon	+	-	-	0	0	0	0	0	+	-	0	+	+
High Strength Rayon	+	-	-	0	+	0	0	0	+	-	0	+	+
High Wet Modulus Rayon	+	-	-	0	-	0	0	0	+	0	0	+	+
Cross Linked Rayon	+	-	0	0	-	0	0	0	+	-	0	+	+
Cellular Rayon	0	+	+	0	-	0	0	0	+	-	0	+	+

Category	Aesthetics	Durability	Performance	Cost
----------	------------	------------	-------------	------

+ Better than Cotton
0 Equal to Cotton
- Poorer than Cotton

Figure 8—Broadcloth of 65% Type 54 Dacron/35% Cellulosic Fiber with Commercial Dacron/Cotton Finish

the polyester/cotton fabrics per se. All of these fabrics have very good durability since the Dacron was the main contributor in all of them.

It was in performance and economics that the rayons offered clear cut advantages over cotton. The rayon blends were clearly superior in wet wrinkle shedding and seam appearance. While we do not have a precise test for comfort and therefore did not rate rayon ahead on this point, moisture wicking rates showed a decided improvement for the rayon blends. This seems to be reflected in the preference of the wearers which rated these blends slightly better for comfort than Dacron/cotton.

Some advantages in the rayon blends were also apparent. With the exception of the cellular rayon blend, the fabrics, while resilient, lacked firmness and cover. With the exception of high wet modulus fibers, the shrinkage was higher than this market would stand. And finally, the name rayon would be a drawback unless we really had something good in all respects which could be promoted realistically to the consumer. Despite the successes of the cellulose chemists, we would have had to close out the program at this point and look to greener fields, if it were not for some equally successful advances by fabric finishing technologists.

Our first concern was to determine what could be done with the firmness and cover of the rayon blends. Any improvement in luster would also be welcome. Using Dacron/cotton as a control you can see in Figure 9 that the Dacron/rayon was close to it in cover as measured by visible light transmission. However, it did not have even the luster of mercerized Dacron/cotton as measured by reflected light. The firmness of the Dacron/rayon was decidedly below that of cotton as measured by its bending length.

A hot wet calendering treatment developed by the

FIGURE 9
EFFECT OF HOT WET CALENDERING (HWC) ON SHIRTING FABRIC AESTHETICS

Fabric	Count	HWC	Cover Light Transmission	Luster Light Reflectance	Hand Bending Length	
					Original	5 HML
100% Cotton	136x60	No	3.5%	25 MV	1.83 (cm)	1.93
65% "Dacron"/35% Cotton	110x74	No	5.6%	12	1.65	1.48
65% "Dacron"/35% regular rayon	110x74	No	5.8%	1	1.35	1.30
		Yes	3.2%	29	1.48	1.48
65% "Dacron"/35% High Wet Mod. rayon	110x74	Yes	3.5%	28	1.55	1.52
65% "Dacron"/35% Cellular rayon	110x74	Yes	2.8%	29	1.85	1.80

* Trademark for DuPont's polyester fiber.

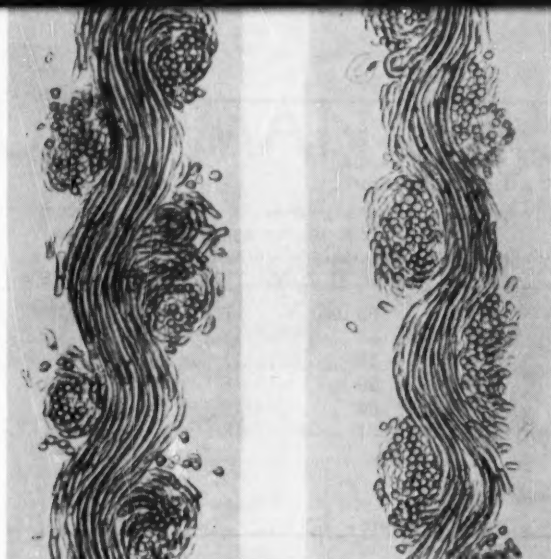


Figure 10—Cross-Section of Dacron/Rayon Fabrics
Left: Without H.W.C.—Right: With H.W.C.

Du Pont Laboratories and reported by J. E. Reith and J. R. Bercaw, "Fabric Aesthetics in Staple Blends", at the National Research Council Advisory Board meeting, Natick, Mass., on May 17, 1960, made a dramatic improvement in all of these properties. This treatment is inexpensive since it involves feeding a damp fabric (20-30% moisture) through a conventional calender (a Schreiner Calender was used in the work reported in this paper) at 360 to 380 degrees F. with about 20 tons of nip pressure. This should be followed by heat setting and some type of wet working to remove the slight harshness imparted by the high pressures.

The calendering deforms the yarn and sets the Dacron in this deformed position thus making it permanent as shown in Figure 10. The cover is improved to that of an all-cotton fabric as measured by transmitted light. It is readily evident as well in the close-up of fabric before and after calendering in Figure 11.

The luster as measured by reflected light is likewise raised to that of the all-cotton fabric. In both properties they exceed by a wide margin the values for uncalendered Dacron/cotton. The Dacron/cotton fabric can be given the same treatment, of course, with a resulting improvement in cover and luster, but the hand becomes very firm and paperlike. More important, the wash-and-wear rating which is already low is reduced by better than .5 units in contrast to a .2 to .3 reduction in the rayon blends.

Our next concern was to determine whether shrinkage could be controlled through fabric finishing. Note in Figure 12 the Dacron/cotton control

FIGURE 12
SHRINKAGE CONTROL THROUGH FABRIC FINISHING
65% "Dacron"/35% Regular Rayon (110x74)

Type Finishing	Shrinkage in Finishing	Shrinkage in Commercial Laundry	
		1st	5th
"Dacron"/Cotton	0-2%	0.3%	0.9%
Same as "Dacron"/Cotton	1-2%	2.5%	5.2%
Relaxed	6%	0.4%	1.2%
Resin	2%	1.0%	1.8%
Hot Wet Calendering	1-2%	1.5%	3.2%

* Trademark for DuPont's polyester fiber.

suffered little working loss and had adequate stability after Sanforization. The same process when applied to regular rayon or, for that matter, all of the other rayons except the high wet modulus type, produced objectionable progressive shrinkage. High fabric relaxation during finishing was an adequate answer as far as shrinkage control was concerned but posed problems to the finisher. Chemical finishing is a satisfactory answer in many end uses, however, it has two drawbacks in dress shirts: (1) the extreme durability demanded in this use and (2) the cost of good chemical finishing.

The hot wet calendering process produced some improvement but did not adequately overcome the tendency toward progressive shrinkage. In contrast to other rayons the high wet modulus blend had the same low working loss and progressive shrinkage as the cotton blend and readily met the high dimensional stability requirements of dress shirts. Therefore, it offers the best answer to shrinkage control without chemical finishing.

A close look at the performance characteristics of these fabrics in Figure 13 reveals some differences between the rayons and cotton including some strong advantages for the rayons, but no serious problems.

The automatic wash-and-wear ratings of the rayon blends are significantly better than the Dacron/cotton ratings and the ratings for all the rayons are very close. Field test results reveal that markedly fewer people would demand touch-up ironing with the rayon blends and that any ironing would require less time and effort. The hot wet calendering treatment further reduced the time and effort even though it had caused a slight reduction in the wash-and-wear rating. The ratings shown in Figure 13 are based on the technique reported in the Du Pont Information Bulletin, "Test Methods to Determine Wash-and-Wear Properties", X-83. While this method gives values 0.5 to 1.0 units lower than the AATCC method, the ratings show good correlation and it was used because it is precise enough to permit the small distinctions shown here among the rayons.

In addition to a wet wrinkle shedding advantage the rayon blends show a clear advantage in reducing the number and severity of wear wrinkles. This has been largely a subjective observation and therefore has not been included in the tables although even the dry crease recovery angle is higher by a few degrees.

Pilling is not a serious problem with any of the rayons although a surface nap is likely to develop on Dacron/rayon fabrics unless they are singed closely. Abrasion losses are not serious and tear strength is more than adequate.

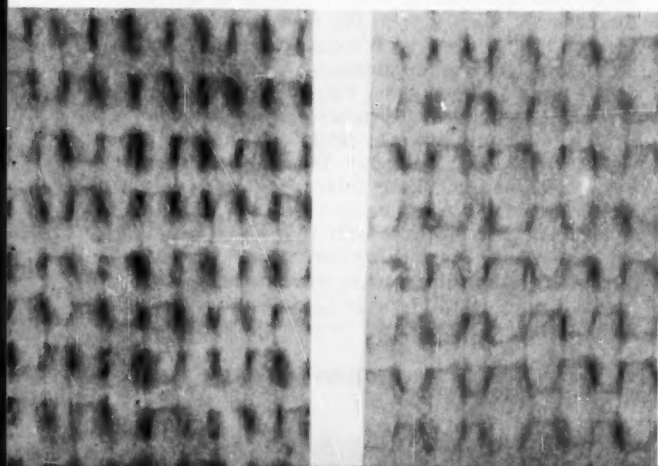


Figure 11—Cover of Dacron/Rayon Fabrics
Left: Without H.W.C.—Right: With H.W.C.

FIGURE 13

EFFECT OF MODIFIED RAYONS ON PERFORMANCE
(Blended with 65% "Dacron"® in 3.0 oz./yd.² shirting)

	Automatic¹ Wash & Wear	Comfort² Weirck Wicking	Pilling¹	Strength	Abrasion (Accel.)	Tongue Tear
Cotton	2.2	0.5"	5.0	68 lbs.	11%	3.8 lbs.
Regular rayon	3.1	1.3	4.8	66	13	3.7
High Strength Rayon	3.2	1.3	4.0	70	11	3.4
High Wet Modulus	3.0	1.0	4.8	59	12	3.2
Cross Linked Rayon	3.0	-	4.1	66	15	3.3
Cellular Rayon	2.8	1.4	5.0	61	12	3.3

¹ 5.0 Perfect — 1.0 Bad.

² Unchanged by hot wet calendering.

* Trademark for DuPont's polyester fiber.

Figure 14
YARN PROPERTIES OF 50/1 65%
TYPE 54 "Dacron"®/35% CELLULOSE

Type Cellulose	Lea Product	Elongation
High Strength	2650	11.8%
Cotton	2450	7.4
Regular Rayon	2400	11.2
Cross Linked	2150	12.1
Cellular	2100	12.6
High Wet Modulus	2050	7.2

* Trademark for DuPont's polyester fiber.

Strength is close to that of the cotton blend with the exception of the high wet modulus and thin-walled fibers. Any deficiencies here relate only to limitations encountered in spinning, weaving, or finishing since the strength of all these fabrics exceeds by a substantial margin that of the resin finished 100% cotton shirts. Figure 14 shows that the high strength rayon exceeds that of the Dacron/cotton, regular rayon is third in order, the cross-linked fiber substantially below it, followed by the cellular fiber

Cellulosic Fiber	Resilience	Crispness	Cover	Luster	Strength	Tongue Tear	Abrasion Resistance	Pilling	Automatic W/W	Dimensional Stability	Comfort	Ironing Effort	Economics	+	-
Cotton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regular Rayon	+	+	+	+	0	0	0	0	+	+	+	+	+	6	2
High Strength Rayon	+	+	+	+	0	0	0	0	+	+	+	+	+	7	2
High Wet Modulus Rayon	+	+	+	+	0	0	0	0	+	0	+	+	+	6	2
Cross Linked Rayon	+	+	+	+	0	0	0	0	+	0	+	+	+	6	7
Cellular Rayon	0	+	+	+	0	0	0	0	+	0	+	+	+	6	2
Category	Aesthetics			Durability			Performance			Cost					

+ Better than Cotton

0 Equal to Cotton

- Poorer than Cotton

Figure 15—Broadcloth of 65% Type 54 Dacron/35% Cellulosic Fiber with Commercial Dacron/Cotton Finish plus Hot Wet Calendering.

and last, the high wet modulus fiber. The lower strength of the high wet modulus fiber would be of particular concern in blends with Type 64 Dacron and in counts above 50/1 with Type 54. However, pilot plant work on improved versions of these fibers gives every promise of producing a substantially stronger high wet modulus fiber in the near future. We find that Fortrel produces strength similar to the Type 54 Dacron while early samples of Kodol come closer to Type 64. Kodol-HM moves toward Type 54 Dacron. We have no data on Vycron at this time.

In summary, when hot wet calendering is added to the regular finishing operations for Dacron/rayon broadcloth, the pluses and minuses in Figure 8 change to that shown in Figure 15. All of the rayon blends have an impressive list of advantages over the Dacron/cotton, but on balance the high strength rayons seem to lead the others (7+ and 2-). A closer look, however, shows that one of the drawbacks is very serious in this end use—dimensional stability. This drawback affects all but the high wet modulus blend. Furthermore, the strength of the high wet modulus blend is of concern only in sheer fabrics or in blends with some polyesters and the strength level will be raised substantially before long. Hot wet calendering has brought the crispness close to cotton and the difference cannot really be regarded as drawback since a large percentage of the test wearers preferred its fullness over the Dacron/cotton blend. Therefore, I think the reader will agree that the high wet modulus fiber seems to be an impressive contender in the polyester/cellulosic dress shirt market. In fact, a contender that should reach commercial importance very soon.

In conclusion, we rayon producers believe that we are rapidly improving our technical ability to meet today's textile demands and that these efforts will be increasingly important in the near future. The dress shirt program is a typical example of this approach. The aim is not to duplicate all aspects of existing fabrics, but to offer some *real* improvements to the consumer which can be promoted and at the same time to offer him a wider range of aesthetic properties than are available today. The findings in this program have lead to equally interesting results in print-cloths and other constructions.

This engineering approach is leading to a better understanding of wicking in towels, abrasion in sheets, filtration phenomena, etc. In these areas and others we find that properly engineered rayon blends can do the job better. ■

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in November 1960. All prices are given to change without notice.

CELLULOSIC YARNS ACETATE

American Viscose Corp.

Current Prices Effective March 22, 1960

Bright and Dull

Denier & Filaments	Intermediate Twist**			Spinning Twist		
	Cones	Twister T-Tubes	Warps	Cones & C-Tubes	Warps	
40/11	\$....	\$....	\$....	\$....	\$1.14	
45/14					1.03	
55/14-20	.99	.97	1.00	.93	.87*	
75/18					.90	
75/20	.95	.93	.96	.89	.86	
100/28	.91	.89	.92	.85	.86	
120/32	.82	.80	.83	.76	.77	
150/36					.70	
150/41	.74	.73	.75	.69	.70	
200/54	.70	.69	.71	.66	.67	
240/80				.65	.66	
300/80	.65	.65	.67	.62	.63	

* Tricot Spool Only.

** Standard Twist 2 $\frac{1}{2}$ Additional.

Terms: Net 30 days.

Celanese Fibers Company

Current Prices Effective March 22, 1960

Acetate Filament Yarn Prices
Bright and Dull

Denier and Filaments	Intermediate Twist			Spinning Twist		
	4 & 6-Lb. Cones	Beams	4-Pound Cheeses	Cones	Beams	O Twist Tubes
45/13	\$1.12	\$1.13	\$....	\$....	\$1.03*	\$....
55/15	.99	1.00			.87*	.82
75/20	.95	.96		.89	.90	.68
75/50	.97	.98			.92	
100/26-40	.91	.92		.85	.86	
120/40	.82	.83		.76	.77	
150/40	.74	.75	.74	.69	.70	
200/52	.70	.71		.66	.67	
240/80	.68			.64	.65	
300/80	.66	.67		.62	.63	
450/120	.66	.67		.62	.63	
600/160	.65	.66				
900/80-240	.63	.64				

* Tricot beams only. This item with Permachem—\$.05 additional.

3T/10 electrical finish available at no premium.

3 to 5 turns on Cones or Beams \$.02 Additional

Over 5 turns—55 denier \$.06 Additional per Turn

Over 5 turns—75 denier \$.04 Additional per Turn

Over 5 turns—100 denier \$.03 Additional per Turn

Over 5 turns—150 denier & coarser \$.02 Additional per Turn

150 Denier 12-TM Tubes \$.73

3 Pound Cheeses \$.01 Less than 4-lb. Cheeses

2-BU and 4-BU Tubes Same price as 4 & 6-lb. cones

Premium for Serving Tubes \$.05

Part Cone Premiums: 2-lbs. \$.05

1-lb. \$.10

Under 1-lb. \$.20

Celaperm Filament Yarn Prices

Denier and Filaments	Intermediate Twist			Spinning Twist		
	4 & 6-Lb. Cones	Beams	4-Pound Cheeses	Cones	Beams	O Twist Tubes
55/15	\$1.37	\$1.38	\$....	\$....	\$1.31	\$1.32
75/20	1.34	1.35		1.28	1.29	
100/26	1.28	1.29		1.22	1.23	
120/40	1.19	1.20		1.13	1.14	
*150/40	1.11	1.12		1.06	1.07	
200/104	1.05	1.06		1.01	1.02	
300/80	1.01	1.02		.97	.98	
450/120	.99	1.00		.95	.96	
600/160	.97	.98				
900/240	.94					

* 150/22/40 available in all colors. Contact our District Sales Representative for current availability of colors in other denier.

Over 5 turns—55 denier \$.06 Additional per Turn

Over 5 turns—75 denier \$.04 Additional per Turn

Over 5 turns—100 denier \$.03 Additional per Turn

Over 5 turns—150 denier & coarser \$.02 Additional per Turn

Celaperm Black Yarn Prices

Effective March 22, 1960

Denier and Filaments	Intermediate Twist			Spinning Twist		
	4 & 6-Lb. Cones	Beams	4-Pound Cheeses	Cones	Beams	O Twist Tubes
55/15	\$1.17	\$1.18	\$....	\$....	\$1.11	\$1.12
75/20	1.14	1.15		1.08	1.09	
100/26	1.08	1.09		1.02	1.03	
120/40	.99	1.00		.93	.94	
150/40	.91	.92		.86	.87	
200/52	.83	.86		.81	.82	
300/80	.81	.82		.77	.78	
450/120	.79	.80		.75	.76	
600/160	.77	.78				
900/80	.74					

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Acele" Acetate
Bright & Dull

Denier & Filament	Zero Twist			Low Twist			Intermediate Twist		
	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes
45-13	.94	1.02							
55-18	.82	.86							
55-24	.82	.86		.91					
75-24	.86	.89		.90					
75-50				.92					
100-32	.82	.85		.86					
120-50	.73	.76		.77					
150-40	.66	.69		.70					
200-60/64	.65	.66		.67					
240-80		.65							
300-80	.60	.62		.63					
450-120	.61	.62		.63					
600-160		.62		.65					
900-44				.63					
900-240	.61**			.63					
1800-88				.61					
2700-132				.61					
3000-210				.61					

(A) Regular Twist (2.9 and 5 T.P.I.)—add \$.02 to Intermediate Twist Price.

(B) 1 lb. % Tubes—add \$.02 to 2 & 4 lb. % Tube Price.

** Bright only 2" Tubes.

Color-Sealed

Denier & Filament	Zero Twist			Low Twist			Intermediate Twist		
	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes
55-18	\$1.245	\$1.315**							
75-24	1.18	1.28		1.29	1.32	1.33	1.34	1.35	
100-32	1.14			1.23	1.26	1.26	1.28	1.29	
150-40	1.03	1.06	1.06	1.07	1.10	1.11	1.11	1.12	
200-64				1.04	1.05	1.05	1.05	1.06	
300-80	.95	.97		.98	1.00	1.01	1.01	1.02	

(A) Regular Twist—Add \$.02 to Intermediate Twist Price.

** Tricot only.

Black

Denier & Filament	Zero Twist			Low Twist			Intermediate Twist		
	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes
55-18	1.045								
75-24	.98	1.08		1.09					
100-32	.94			1.03					
150-40	.83	.86	.86	.87					
200-60									
300-80	.75	.77	.77	.78					
450-120				.81					
600-160				.79					
900-240, 44				.77					
				.74					

(A) Regular Twist (2.9 and 5 T.P.I.)—add \$.02 to Int. Twist Price.

(B) 1 lb. % Tubes—add \$.02 to 2 & 4 lb. % Tube Price.

Specialty Yarns
Cycloset for Tricot

Denier & Filament	Natural			Black			Color-Sealed		
	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes
40-13 Natural			\$1.07						
55-18/24 Natural			.83						
75-24 Natural			.87						
100-32 Natural			.83						
40-13 Black			\$1.225						
55-18 Black			1.08						

Thick & Thin

Denier & Filament	Natural			Black			Color-Sealed		
	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes
200-64 Int. Twist	\$1.05	\$....		\$1.15	\$....		\$1.35	\$....	
200-64 Reg. Twist	1.08	1.09		1.17	1.21				

Terms: Net 30 days. Subject to changes without notice.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

* Dupont's Trademark for its acetate yarn.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Current

"Estron" Yarn, Bright or Dull — White

Denier & Filament	Regular Twist			Intermediate Twist			Low Twist			Zero Twist			Tricot Beams		
	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes	Cones	Beams	2 & 4 Lb. % Tubes
55/13	\$1.01	\$1.02	\$0.99	\$1.00	\$0.93	\$0.94	\$0.82	\$0.87	\$0.86						
75/19	.97	.98	.95	.96	.89	.90									
75/49	.99	1.00	.97	.98											
100/25	.93	.94	.91	.92	.85	.86									
120/30	.84	.85	.82	.83	.76	.77									
150/38	.76	.77	.74	.75	.69	.70									
200/50	.72	.73	.70	.71	.66	.67									

300/75	.68	.69	.66	.67	.62	.63	.60	.....
450/114	.68	.69	.66	.67	.62	.63	.....	.....
600/156	.67	.68	.65	.66	.62	.63	.....	.....
900/230	.65	.66	.63	.64	.....	.....	.61	.....
Heavier	.....	.....	.....	.....	.....	.....	.56	.....

Current

"Chromspun"—Standard Colors (Except Black)

Denier & Filament	Regular Twist	Intermediate Twist	Low Twist
55/13	Cones \$1.39	Cones \$1.37	Cones \$1.31
75/19	Beams \$1.40	Beams \$1.38	Beams \$1.32
100/25	1.36	1.34	1.28
150/38	1.37	1.35	1.29
200/50	1.30	1.28	1.22
300/75	1.31	1.29	1.23
450/114	1.11	1.12	1.06
900/230	1.01	1.02	1.07
	.99	.97	.98
	.94	.95	.96

Current Prices

"Chromspun"—Black

Denier & Filament	Regular Twist	Intermediate Twist	Low Twist
55/13	Cones \$1.19	Cones \$1.17	Cones \$1.12
75/19	Beams \$1.16	Beams \$1.14	Beams \$1.09
100/25	1.10	1.08	1.03
150/38	.93	.91	.87
200/50	.87	.85	.82
300/75	.83	.81	.78
450/114	.81	.79	.76
900/230	.76	.74	.75

Prices are subject to change without notice.

Prices on special items quoted on request.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in continental United States except Alaska. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

* "Estro" is a trade-mark of the Eastman Kodak Company.

* Chromspun is a trade-mark of the Eastman Kodak Company.

RAYON

American Bemberg

Current Prices

Regular Production Reel Spun Yarn

Den./Fil.	No Turn	Turned* Skeins & Cones	8 1/2 Turns	12 Turns	15 Turns	18 Turns
40/30	\$1.49	\$1.05	.....	.....	.....	\$2.08
50/36	1.29	1.55	.....	.....	.....	1.85
65/45	1.22	1.38	.....	\$1.61	.....	1.66
75/60**	1.11	1.25	.....	1.48	\$1.53	1.56
100/74**	1.02	1.15	.....	1.40	1.45	1.51
125/90	1.01	1.12	\$1.16	1.37	.....	.....
150/120	.99	1.08	1.18	1.33	.....	.....
300/225	.....	1.01	.....	.....	1.14	.....
900/744	.....	.91	.....	.....	.....	.....
1800/744	.....	.91	.....	.....	.....	.....

* Turn includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.

** Spun Dyed Cupracolor Black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den./Fil.	No Turn	5 Turn	8 Turn	12 Turn	15 Turn
40/30	\$1.35	\$1.35	.....	.....	.....
50/36	1.05	1.05	.....	.....	.....
65/45	1.13	.....	.....	.....	.....
75/45*	1.04	.....	\$1.15	\$1.15	\$1.38
100/60*	.96	.....	1.10	1.10	1.30
125/60	.91	.....	1.06	1.06	1.38
150/90*	.83	.....	.87	.87	1.21
150/120	.87	.....	.....	.....	1.21

* Available also in Spun Dyed Cupracolor Black at 15¢ per lb. extra.

"44" HH "Parfe" Spool Spun Yarn

Den./Fil.	No Turn	5 Turn	8 Turn	12 Turn	15 Turn
50/36	Cones \$1.60	Cones \$1.85	Beams \$1.85	Cones \$1.78	Cones \$1.88
75/45	1.48	1.58	1.59	1.78	1.88
100/60	1.38	1.48	1.48	1.68	1.78
150/90	1.21	1.28	1.28	1.63	1.73
300/120	1.21	1.28	.....	.....	.....

Nub-Lite (Short Nubbi)

Code	Den./Fil.	2 1/2 Turn Natural	2 1/2 Turn Cones*	5 Turn Natural	5 Turn Cones*
1515	160/90	.....	.....	\$1.50	\$1.40
1519**	155/90	.....	.....	1.50	1.40
2008	200/120	.....	.....	1.11	1.01
3002	315/190	\$1.15	\$1.05	.....	.....
4011	401/225	1.15	1.05	.....	.....
6001	600/360	1.13	1.03	.....	.....
8001	860/450	1.13	1.03	.....	.....

* Basic price for cones when dyed. Dyed Colors 30 and 35 cents above basic price. Prices based on 200 lb. dyed lots only. Prices for natural yarn skeins same as natural cone prices.

** Code 1519 can be run in warp or filling.

CUPIONI Type B

Code	Den./Fil.	2 1/2 Turn Cones
9650	70/45	\$1.69
9680	100/60	1.53
1545	150/90	1.30
9730	285/135	1.15
9792	450/225	1.15
9814	600/372	1.12
9837	940/372	1.02

* Spun Dyed Cupracolor is spun 150, 285, and 940 deniers at 35¢ per pound extra. Cupracolor Black Comes in all deniers.

STRATA SLUB

Code	Den./Fil.	Turned Cones	Price
9747	375/225	3 1/2	\$1.25
9798	450/372	2 1/2	1.15

9823	600/372	2 1/2	1.10
9847	960/372	2 1/2	1.02
9885	1290/372	1 1/2	1.00
9934	2680/744	1 1/2	1.00

* Spun Dyed Cupracolor is spun in 600 and 960 deniers at 35¢ per pound extra.

FLAIKONA

Code	Den./Fil.	Turned Cones	Price
9699	150/148	2 1/2	\$1.35
9769	300/224	2 1/2	1.25
9782	450/270	2 1/2	1.05
9809	600/360	2 1/2	1.05
9840	900/450	2 1/2	1.00
9924	2000/744	2 1/2	.95

* Spun Dyed Cupracolor Black 35¢ per pound extra.

Terms: Net 30 days, F.O.B. shipping point. Minimum freight allowed within the continental limits of the United States, excluding Alaska. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point. Prices are subject to change without notice.

American Enka Corp.

Current Prices

Effective February 29, 1960

Standard Quality Yarns

Den./Fil.	Luster	Turns	Weaving		Skeins		Cakes	Knitting Cones
			Cones	Beams	Long	Short		
50/18	E	5 S	.....	.....	.....	.....	1.63
50/20	B	4 S&Z	.....	.....	.....	.....	1.52
75/10	B	3 S&Z	.....	.....	.....	.....	1.02
75/18	E	4 S	.....	.....	.....	.....	1.14
75/20	B	2.5,4S&Z	1.14	1.14	1.32	1.41	1.02	
75/30	B	8 S	1.24	1.24	1.45	1.59	1.12	
75/45	P,E	2.5,4,5S&Z	1.14	1.14	1.32	1.41	1.02	
75/60	B,P	3,4 Z	1.16	.....	.....	.....	1.04
100/14	B	3 S&Z	.....	.....	1.15	1.23	.90
100/40	B,E	12 S&Z	.....	.....	.....	.....	1.29
100/40	B,P,E	4,5 S&Z	.98	.....	.....	.....	.90
100/40	B	6 S	1.17	.....	1.34	1.44	1.09
100/40	B,P	2.5,4S&Z	.98	.98	1.15	1.23	.90	
100/60	B	4 S&Z	.....	.....	.....	.....	.90
100/60	E	2.5 S	1.00	1.00	.....	.....	.92
125/40	E	3 Z	.....	.....	.....	.....	.87
125/50	B,P	3 S	.96	.96	.....	.....	.....
150/40	B,E	0	.745	.....	.....	.....	.....
150/40	B,P,E	2,1,3S&Z	.82	.82	.96	1.03	.78	
150/40	B,E	5 S&Z	.90	.90	1.15	1.25	.86	
150/40	B,E	6 S&Z	.95	.95	1.20	1.30	.91	
150/90	E	2,1 S&Z	.83	.83	.....	.....	.79
200/40	B	2,1 S	.81	.81	.94	1.01	.77	
200/40	P	3 Z	.....	.....	.94	1.01	.77
250/60	P,E	2,4 Z	.....	.....	.93	1.00	.77
300/30	E	3 S	.81	.85	.....	.....	.....
300/40	B	3,2 Z	.73	.76	.....	.....	.....
300/50	B,E	3 S	.73	.76	.....	.....	.....
300/60,120	B,P,E	2,1 S&Z	.73	.73	.82	.89	.71	
300/60	B	3,5 S	.73	.73	.82	.89	.71	
300/60	B	6 S	.86	.86	.....	1.00	.84
300/120H.T.	B	2,5 S	.75	.75	.....	.....	.73
300/40H.T.	B	3,4 Z	.85	.....	.....	.....	.83
450/60	B	3 S	.69	.71	.....	.....	.67
450/80	B,E	3 S	.69	.71	.78	.85	.67	
600/80	B,E	3 S	.73	.75	.....	.....	.....
600/120	B,E	3 S	.71	.69	.78	.85	.67	
900/120	B	3,4 S	.69	.71	.78	.85	.67	
900/120H.T.	B	3,4 S	.71	.71	.....	.....	.69

B = Briglo
P = Periglio (Semi-Dull)

E = Englo (Dull)
H.T. = High Tenacity

B = Briglo P = Periglo (Semi-Dull)

E = Englo (Dull)

H.T. = High Tenacity

Jetspun® (Colored Yarns)

Den./Fil.	Tenacity	Turns	Weaving Cones	Beams	Colors
100/40	Regular	2.6S	\$1.35	\$1.35	All
150/40	Regular	2.1S	1.17	1.17	All
200/40	Regular	8.0S	1.28	1.28	All
300/120	Regular	2.1S	1.09	1.09	All
450/80	Regular	3.0S	1.05	1.05	All
600/80	Regular	3.4S	1.04	1.04	All
300/40	High	3.4S	1.11	1.11	All
900/120	High	3.4S	1.06	1.06	All

® Registered Trade Mark for American Enka Solution-dyed Rayon Yarn.

Skyloft® (Lofted Rayon Filament Yarns)

Natural and Jetspun®

Denier	Denier per Filament	Twist	Natural	Black	Other Colors
1000	7.5	3.4S	\$1.82	\$1.05	\$1.05
2200	15	3.5S&Z	.67	.77	.84
2700	15	3.5S&Z	.67	.77	.84
5300	15	3.0S&Z	.65	.75	.82

Registered Trademark for American Enka Texturized yarn.

American Viscose Corp.

Effective October 13, 1959

Graded Yarns

Denier	Filament	Type	Regular Turns	Short Skeins	Long Skeins	Cones	Beams	Cakes
75	10-30	Bright	\$1.41	\$1.32	\$1.14	\$1.14	\$1.14	\$1.02
75	30	Dull	.....	.....	.....	1.14	1.14	1.02
100	14-40	Bright	1.23	1.15	.98	.98	.98	.90

TEXTILE

— NEWS BRIEFS



Donald R. Jonas

Jonas Heads N. C. Millmen

Donald R. Jonas, executive vice president of Johnston Mills Co., was elected president of the North Carolina Textile Manufacturers Association at the Association's recent 54th annual meeting at Pinehurst, N. C. He succeeds J. C. Cowan, Jr., vice chairman of the board of Burlington Industries, Inc. D. R. LaFar, Jr., LaFar Mills, was named first vice president and Hal W. Little, chairman of the board of Little Cotton Manufacturing Co., second vice president. Thomas N. Ingram was reelected executive vice president.

Robert E. Smith has been promoted to general manager of marketing for The Chemstrand Corp. Masten R. Dalton has been named executive director, Acrilan, and Robert S. Godfrey has been appointed technical sales service representative.

Harry Wrench has been named field technical service representative for mills in the New England territory by American Cyanamid Co.'s Fibers Division.

Helen D. Vincent has been appointed stylist for Caprolan nylon fabrics and David G. Aston has been named to the Caprolan nylon merchandising staff of the Fiber Marketing Department of Allied Chemical's National Aniline Division.

Thomas A. Marshall, Jr., has been elected executive secretary of the American Society for Testing Materials. Fred F. Van Atta was named treasurer, Robert J. Painter continues as consultant to the executive secretary, and Raymond E. Hess continues as associate executive secretary.

C. Roger Brussee has been named manager of marketing services for Whitin Machine Works.

J. Clyde Kelley has been appointed southern sales manager for twisting and winding machinery for Fletcher Industries.

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AREA DEVELOPMENT DEPARTMENT
GULF STATES UTILITIES COMPANY

Division Offices: Baton Rouge and Lake Charles, La.; Navasota, Port Arthur and Beaumont, Texas
General Offices — Beaumont, Texas

100 60	Dull			1.00	1.00	.92
150 24-4C	Bright	1.03	.96	.82	.82	.78
150 40	Semi-Dull	1.03	.96	.82	.82	.78
150 40	Dull			.82	.82	.78
150 90	Dull			.83		.79
200 16-44	Bright	1.01	.94	.81	.81	.77
250 60	Semi-Dull & Dull	1.00	.93	.80	.80	.77
300 15	Bright		.85	.78	.78	
300 30	Dull Flat Filament			.85		
300 44	Bright & Dull	.89	.82	.73	.73	.71
300 234	Dull			.83		.81
450 60-100	Bright		.78	.69	.71	.67
600 100	Bright & Dull		.78	.69	.71	.67
900 50-100-150	Bright		.78	.69	.71	.67
1200 75	Bright		.78	.69	.71	
2700 150	Bright		.78	.69	.71	

Extra Turns Per Inch

150 40	Bright 6-Turns	\$1.25	\$1.15	\$.90	\$.90	\$.88
200 44	Bright 6-Turns		1.05	.96	.96	
300 15	Bright 5-Turns			.86	.86	
300 44	Bright 4.3-Turns			.81		.79
300 44	Bright 6-Turns	.97	.90	.86	.86	.84
300 120	Rayflex 6-Turns			.93	.93	
600 30	Bright 5-Turns		.86	.82	.82	.80

Rayflex Yarns

150 40-60	Rayflex	\$.85	\$.85	\$.81
200 75	Rayflex	.84	.84	.80
300 60-120	Rayflex	.75	.75	.73
450 120	Rayflex	.71	.71	.69
600 234	Rayflex	.71	.71	.69
900 350	Rayflex	.80	.71	.69

Colorspun Yarns

Denier	Type	Cones/Tubes Beams/Spools
75	Regular Strength	\$1.71
100	Regular Strength	1.35
150	Regular Strength	1.17
200	Regular Strength	1.14
300	Regular Strength	1.09
450	Regular Strength	1.05
600	Regular Strength	1.05
900	Regular Strength	1.11
300	High Strength	1.06
450	High Strength	1.06
900	High Strength	1.06
300	Regular Strength 5-Turns	1.19

Avicron Yarns

Denier	Filament	Cones/Tubes Beams/Spools
1800	100-200	Singles & 2 Ply \$1.61
2700	150-300-980	Singles & 2 Ply .58
2700	980	Singles 5 TPI .61

Viscose Filament Yarns

The following material deposit charges are required:		
Metal Section Beams		\$170.00 each
Metal Section Beam Racks		75.00 each
Metal Tricot Spools—14" flange		30.00 each
21" flange		60.00 each
32" flange		150.00 each
Metal Tricot Spool Racks—14" flange		135.00 each
21" flange		100.00 each
32" flange		75.00 each
Wooden Tricot Spool Racks		20.00 each
Cloth Cake Covers		.05 each

Same to be credited upon return in good condition—freight collect.

Celanese Fibers Company

Effective October 12, 1960

Viscose Rayon Filament Yarn Prices—Bright and Dull

Denier/Fil/Type	Beams	Cones	Cakes
75/30/2Z	1.11		
75/30/3	1.11	1.10	.98
100/40/2Z	.97		
100/40/3	.97	.96	.88
100/40/5		1.02	.95
100/60/2Z	NS	.96	
100/60/3		.98	.90
125/40/2Z		.95	
125/40/3		.95	.87
150/40/0	NS	.81	.74½
150/40/2Z		.81	
150/40/3		.79½	.76
150/40/5		.90	.86
150/40/8		.95	.91
150/40/10		.98	.94
150/80/0	NS	.77½	
250/60/0	NS	.74	
250/60/3		.80	.77
300/50/0	NS	.70	
300/50/2Z		.72	
300/50/3		.72	.69
450/60/0	NS	.68	
450/60/3		.70	

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U. S. A.

Prices subject to change without notice.

All previous prices withdrawn.

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept. Current Prices

Effective October 11, 1960

Bright and Dull

Den.	Fil.	Turns/ Inch Up to	Type	Beams	Cones (A) Tubes	Cakes
40	20	3	Textile "Cordura"		\$1.97	\$1.92
50	20	3	Textile "Cordura"		1.72	1.67
50	35	3	Textile "Cordura"		1.77	
75	30	3		\$1.14	1.14	1.02
100	40	3	Bright	.98	.98	.90
100	60	3	Dull		1.00	.92
125	50	3		.96	.96	.87
150	40	3		.82	.82	.78
150	60	3	Bright	.82	.82	.78
150	90	3	Textile "Cordura"		.875	.845
150	100	3	Dull		.83	
300	50	2.5		.73	.73	.71
300	120	3	Textile "Cordura"	.74	.74	.72
450	72	3		.71	.69	.67
600	96	3	Bright	.71	.69	.67
600	240	3	Textile "Cordura"	.72	.70	
900	50	3	Bright	.71	.69	.67
900	144	3	Bright	.71	.69	.67
2700	150	3	Bright	.71	.69	

Thick and Thin

100	40	3	#7 Bright		1.42	
150	90	3	#7 Bright		1.08	
200	80	3	#7 Bright		1.08	
450	100	3	#7 Bright		.92	
1100	240	3	#60 Bright		1.03	
2200	480	3	#80 Bright		.98	

Monofil

300	1	3	Bright	1.15	1.10	
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Plush

300	30	3	Dull	.85	.81	
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(A) 2¢/lb. additional for cones less than 3#.

Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

* "CORDURA" and "SUPER CORDURA" are Du Pont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective June 29, 1959

Continuous Process Textile Yarns

Denier	Fila- ment	Turns per In.	Type	Beams	2.8# Cones	4.4# Cones and Tubes
150	40	2.5"S"	Bright	.82	.82	
200	20	2.5"S"	Bright	.81	.81	
300	44	2.5"S"	Bright	.73	.73	
450	60	2.0"S"	Bright	.69	.69	.69
600	90	1.5"S"	Bright	.69	.69	.69
900	50	2.0"S"	Bright	.69	.69	.69
900	150	2.0"S"	Bright	.69	.69	.69
1100	480	2.0"Z"	Bright extra strong	.66		.66

Lustre #4 is semi-dull.

Prices are subject to change without notice.

Strawn Monofilament

Denier	Fila- ment	Turns per In.	Type	4.4# Cones	Spools and Tubes
450	1	0	Bright and Dull	1.00	1.05
450	1	2	Bright and Dull	1.00	1.05
1250	1	0	Bright and Dull	1.00	1.05
1250	1	2	Bright and Dull	1.00	1.05

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points in continental United States except Alaska.

Prices are subject to change without notice.

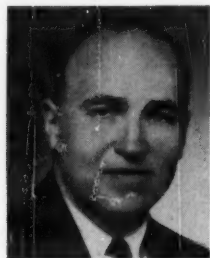
North American Rayon Corp.

Current Prices

Denier/Filament Normal Strength Yarns — NARCO	Twist	Knitting* Cones	No Twist Knitting Cones	Weaving Cones, Velvet Cones, Beams, Untreated Tubes**	Cakes
75/30	3.5			1.14	1.02
75/30	7			1.27	
75/30	12			1.35	
75/30	15			1.37	
75/30	20			1.40	
100/40/60	3.5			.98	.90
100/40	12			1.22	
125/25/60	3			.98	.87

Henry J. Linton has been appointed director of fabric development for Iselin-Jefferson Co., Inc.

Edwin Berliner has been named coordinator of the "Prestwick" licensing program for Courtaulds (Alabama) Inc.



George R. Vila

George R. Vila has been elected president and chief operating officer of United States Rubber Co. He succeeds John W. McGovern, who is retiring after 40 years of service with the company.

Edwin M. Irish has been named manager of sales and Dr. E. T. Severs manager of market development for AviSun Corp. Dr. W. Paul Moeller continues as manager-special projects. James C. Warren was named sales manager-polymer.

Robert F. Romasco has been appointed service control manager of Whitin Machine Works.

Thomas F. McHugh has been named sales engineer for the Northeast and Canadian sales regions for Roberts Co.



Howard J. Philipp

Dr. Howard J. Philipp has been appointed vice president-planning for Celanese Fibers Co.

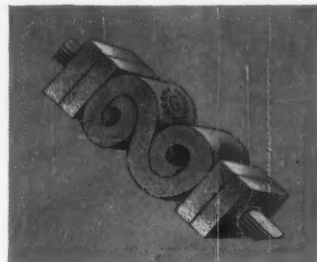
George L. Payet has been named supervisor of textile research at Columbia-Southern Chemical Corp.'s research laboratory at Barberton, Ohio.

Deaths

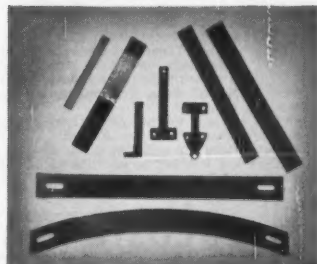
John Politi, district technician in charge of textiles—sales and technical work—for the Eastern division of Kelco Co., died recently after a short illness.

Garland

your no. 1 source for



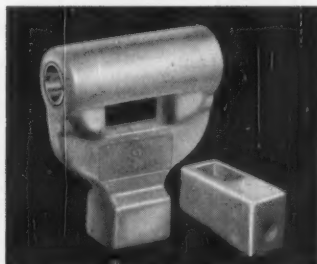
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150/42	0		.74½		
150/42/60	3	.80½		.82	.78
300/75	0		.71		
300/75	3	.73		.73	.71
900/46	2.5	.69		.69	
1800/92	2.5	.69		.69	

* Oiled Cones \$.01 per pound extra for Graded Yarns only.

** 1 lb. Tubes \$.02 per pound extra for Graded Yarns only.

"Terms: Net 30 days, F.O.B. shipping point. Minimum freight allowed within the continental limits of the United States, excluding Alaska. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point. Prices are subject to change without notice."

TRIACETATE

Celanese Fibers Company

Current Prices Arnel Yarn Prices
Bright & Dull

Effective August 19, 1958

Denier and Filaments	Cones	Beams	Thick and Thin Cones
55/WKZ/15	\$	\$1.16	\$
55/2Z/15	1.32	1.33	....
75/WKZ/20	1.21	1.16	....
75/2Z/20	1.14	1.22	....
100/2Z/26	1.14	1.15	....
150/2Z/40	.95	.96	....
200/2Z/40	.92	.93	1.25
200/2Z/52	.87	.88	1.23
300/2Z/80	.86	.87	....
450/2Z/120	.85	.86	1.21
600/2Z/160			

3 to 5 Turns on Cones or Beams—\$.02 Additional

Premium for Black Arnel—\$.25 Per Pound

Premium for Navy Arnel—\$.37 Per Pound

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

CELLULOSIC HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective October 17, 1960

Industrial Yarn Prices

Prices Subject To Change Without Notice

	Denier/Filament	Beams	Cones
TYREX (ENKA II)			
	1100/720	.55	57.5
	1650/1100	.49	51.5
	2200/1440	.48	50.5
	3300/2160	.48	50.5
TYREX FABRIC (ENKA II)			
	1100/740	.57	57.5
	1650/1100	.58	57.5
	2200/1440	.57	57.5
SUPRENKA M			
	1230/720	.55	57.5
	1600/1100	.51	53.5
	1800/1100	.49	51.5
	1870/1100	.49	51.5
	2200/1440	.48	50.5
	2400/1440	.48	50.5
	3300/2160	.48	50.5
	3300/2160	.48	50.5
	3650/2160	.48	50.5
SUPRENKA MS			
	1100/720	.55	57.5
	1650/1100	.49	51.5
	2200/1440	.48	50.5
	3300/2160	.48	50.5
TEMPRA—MECHANICAL AND CHAFER			
	1100/480	.54	56.5
	1230/480	.54	56.5
	1650/720	.48	50.5
	1820/720	.48	50.5
High & Low Elongation			
	2200/960	.47	49.5
	2400/960	.47	49.5
	3300/2160	.47	49.5
TEMPRA—SEWING YARN			
	1130/480 (5.0Z)	.58	56
	1230/480	.60	60
	1750/720	.50	50
	1820/720	.49	49
HIGH TENACITY			
	300/40, 300/120	.75	.75
	900/120	.71	.71
REGULAR TENACITY			
	100/40	.98	.98

* Effective December 1, 1960.

American Viscose Corp.

Effective Dec. 23, 1959

Tyrex*

Tyrex* Viscose Tire Yarn

Denier	Filament	Twist	Beams	Cones
1100	980	0	.55	.575
1100	980	Z	.55	....
1650	1500	0	.49	.515
1650	1500	Z	.49	....
2200	1500	0	.48	.505

Tire Fabric Made with Tyrex* Viscose
Tire Yarn and Cord

Denier	Filament	Carcass	Top Ply	Breaker
1100	980/2	.67	.67	.67
		Factor Open-525	300-490	115-275
1650	1500/2	.58	.59	.615

* Factor determined by dividing total ends by picks.

* Tyrex is a collective trade-make of Tyrex Inc. for Viscose Tire Yarn and Cord.

Rayon Tire Yarn

Yarn

High Strength

Denier	Filament	Twist	Unslashed Beams	Unslashed Cones	Slashed Beams	Slashed Cones
1100	490	0	....	....	.54	.565
1150	490	Z	.54	.565	....	....
1650	980	Z	.48	.505	....	....
1650	980	0	....	....	.48	.505
1875	980	Z	.48	.505	....	....
2200	980	0	....	....	.47	.495

Super "Rayflex"

Type	Denier	Filament	Twist	Unslashed Beams	Unslashed Cones	Slashed Beams	Slashed Cones
210	1650	980	Z	....	....	.48	....
	1875	980	Z	.48	.505	....	....
120	1800	1500	0	....	.515	....	....
	3300	3000	0	....	....	.48	.505
	4400	3000	0	....	....	.48	.505

Chafer Yarn

1100/490 High Strength 5Z Twist .58 .58

Adhesive Dipped Yarn or Cord

.06 Premium

"Avisco" Bag Sewing Twine

Sold by The American Thread Company

Prices Effective June 21, 1960

1100/980 Super "Rayflex" 120	0-2Z	Cones	.62
1500/980 Super "Rayflex" 120	0-2Z	Cones	.57
1780/1500 Super "Rayflex" 120	0-2Z	Cones	.55

Also available in Red at 0.7 Premium.

All Yarns Sold "Not Guaranteed for Dyeing".

Tire Fabric

Fila-	Denier	ment	Type	Carcass	Top Ply	Breaker
	1650	980/2	Super "Rayflex" 210	Open-525	300-490	115-275
				.57	.58	.605

* Factor determined by dividing total ends by picks.

Cord on cones in regular Tire Yarn twists same as fabric prices.

Other twist combinations—prices quoted on request.

Special packages take premiums indicated.

4.0 oz. Wardwell Tubes20

10.5 oz. Wardwell Tubes10

1.5 lb. Regular Braider Tubes06

3.5 lb. Tubes045

Single Yarn—Based on cone price.

Piled Yarn—Based on fabric price.

The following deposit charges are made on invoices:

Beams \$55.00 each

Crates (Metal) 75.00 each

Fabric Shell Rolls 3.50 each

Same to be credited upon return in good condition—freight collect.

Rayon Tire Yarn and Fabric

Terms: Net 30 days. Seller to select and to pay transportation charges of common and contract carrier except when shipment moves West of the Mississippi River, in which event the actual cost of transportation to the Mississippi River crossing based on the lowest published freight rate, shall be allowed. Title to pass when merchandise is delivered to consignee. Transportation allowance based on lowest published volume rate shall be granted if merchandise is transported from shipping point in vehicle owned or leased and operated by buyer and title to pass when merchandise is delivered to same.

Price subject to change without notice.

Inferior Yarns (Designated HS-SR) .06 Below First Quality Price

Skein Yarn .04 Above First Quality Cone Price

"Avisco" Bag Twine

1-4# Cones .05 Below First Quality List Price Only

4-10# Cones .03 Below First Quality List Price Only

Adding 6 Turns to "0" Twist Yarn .05

Celanese Fibers Company

Effective December 27, 1955

Fortison Yarn Prices

Denier	Packages	Natural	Black
30/2.5/40	2 lb. Cones	\$3.00 lb.	\$3.35 lb.
60/2.5/80	4 " "	2.40 "	2.75 "
90/2.5/120	4 " "	2.25 "	2.60 "
120/2.5/160	4 " "	2.05 "	2.40 "
150/2.5/180	4 " "	1.95 "	2.30 "
270/2.5/360	4 " "	1.85 "	2.20 "
300/2.5/360	4 " "	1.85 "	2.20 "

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

Fortison-36 Rayon Yarn

Bright

Denier and Filament	Twist	4# cones	8# cones	Tubes	Beams
270/280	0.8Z	\$2.30			
300/280	0.8Z	\$2.05			
300/280	3Z	\$2.20			
400/400	0.8Z	\$1.75			\$1.70
400/400	0				
800/800	0.8Z	\$1.25	\$1.25	\$1.75	\$1.30
800/800	3Z	\$1.40			
800/800	0			\$1.25	
1600/1600	0.8Z	\$1.15	\$1.15		\$1.10
1600/1600	2½Z	\$1.30			
1600/1600	0			\$1.15	

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A.

Prices subject to change without notice.

All previous prices withdrawn.

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept. Current Prices

Effective November 1, 1960

"Super Cordura"™

Den Fil	Turns/in	Beams	Cones
1100-720	2	.57	.575
1200-720	2		.575
1530-960	2		.570
1600-960	2		.535
1650-1100	2	.49	.515
1800-1100	2	.49	.515
2200-1440	2	.48	.505
2400-1440	2	.48	.505

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corporation

Effective October 26, 1960

Unbleached Bright High Tenacity Yarns

Single End Beams and Cones—Type 100

Denier	Filament	Turns per Inch	Beams	Cones
1100	480	2.0 "Z"	.565	.54
1150	780	2.0 "Z"	.565	.54
1650	720	2.0 "Z"	.505	.48
1700	720	2.0 "Z"	.505	.48
2200	1000	2.0 "Z"	.495	.47
3300	1440	2.0 "Z"	.495	.47

Tyrex

Tyrex Certified Viscose Tire Yarn

Denier	Filament	Twist	Beams	Cones
1100	720	Z	.575	.55
1650	1100	Z	.515	.49

Terms: Net 30 days f.o.b. point of shipment, title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points in continental United States except Alaska.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

North American Rayon Corporation

Current Prices

Super Super High Strength Continuous Yarn Type 710	Cones	Beams
1100/720 1.6Z	.55	.55
1650/720/1100 2.0Z	.49	.58
Tire Cord Fabrics		
Super Super High Strength Type 710	Rolls	
1100/720	.67	
1650/720	.58	

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold f.o.b. delivery point.

Prices are subject to change without notice.

CELLULOSIC STAPLE & TOW ACETATE

Celanese Fibers Company

Effective March 2, 1959

Staple

(Most Deniers Available in Bright or Dull Luster)

Celanese Acetate Staple	
3, 5.5 & 8 Denier	
(Regular Crimp, Type HC, Type D)	\$.36
2, 12 & 17 Denier	
(Regular Crimp, Type HC, Type D)	.37
35 Denier	.38
50 Denier	.40
Type F—5.5 & 8 Denier	.35
Type F—12 & 17 Denier	.36
Type K—(Available under Celanese License Agreement)	.39
% to % length (All Deniers)	.03 (Premium)
35 Denier Flat Filament Acetate	.40
Non-Textile Acetate Fibers	.29*

Tow (Celatow)

3, 5.5 & 8 Denier	\$.37
2, 12 & 17 Denier	.38
35 Denier	.40
35 Denier Flat Filament Acetate Tow	.42
50 Denier	.42

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. east of Mississippi River. Transportation prepaid to any U.S.A. destination west of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

* No transportation allowed (F.O.B. shipping point.)

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

RAYON

American Viscose Corp. Current Prices

Rayon Staple

	Bright and Dull
Regular	\$.28
"Viscose 22"	.28
1.25 Denier	.31
All Other Deniers	.28
Hi-Crimp	.28
Bleached Crimp	.315
1.5, 3.0 Denier	
Smooth	.30
8.0 & 15.0 Denier Smooth	.32
22.0 Denier	.33
Bleached	
Extra Strength	.40
0.75 Denier	.35
1.0 Denier	
XL	.40
1.0 Denier	.37
1.5, 3.0 Denier	.34
XL1	
Fiber 40	.43
1.0 Denier	.40
1.5 Denier	

Colorspun Black Staple

1.5, 3.0, 5.5 Denier	.37
15.0 Denier crimped	.40

Prices of other colors on request.

Tow

1.5, 3.0, 5.5 Denier	.35
9.0 Denier	.37
15.0, 20.0 Denier	.38
Color spun black tow	.42

Terms: Net 30 days.

American Enka Corp.

Current Prices Effective April 1, 1960

Rayon Staple

Regular Crimp

	Bri	Dull
1.5 and 3 denier	\$.28	\$.28
High Crimp		
4.5 denier	.28	
6.5 denier	.28	.28
8 denier	.28	
15 denier	.28	.28

Celanese Fibers Company

Effective May 1, 1959

Rayon Tow

	Bright & Dull
1.5, 3, 5.5 D.P.F.	.35
Total denier 200,000	
8 D.P.F.	.37
Total denier 207,000	

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. East of Mississippi River. Transportation prepaid to any U.S.A. destination West of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

Courtaulds (Alabama) Inc.

Rayon Staple

	Bright	Dull
Regular Rayon Staple Fiber	\$.28	\$.28
Crimped Rayon Staple		
High Crimped Rayon Staple Fiber	.28	.28

Coloray® Solution Dyed Rayon Staple

Color	Price per lb.
Black	\$.37
Silver Grey	\$.41
Mocha	\$.41
Tan	\$.41
Medium Brown	\$.41
Aqua	\$.42
Rose	\$.42
Dawn Pink	\$.42
Ecru	\$.42
Dark Brown	\$.42
Gold	\$.45
Lilac	\$.45
Slate Grey	\$.45
Sulphur	\$.46
Nugget	\$.46
Light Blue	\$.46
Crystal Blue	\$.47
Apple Green	\$.47
Sage	\$.47
Peacock Blue	\$.48
Medium Blue	\$.50
Indian Yellow	\$.51
Dark Blue	\$.51
Hunter Green	\$.51
Turquoise	\$.52
Malachite Green	\$.53
Red	\$.58

In addition to the above, Black is also available in:

1½ den. 1¼"	5½ den. 3"
3 den. 1¼"	5½ den. 6"
3 den. 1-9/16"	

Terms: Net 30 days f.o.b. LeMoyné, Alabama: Minimum transportation allowed to points in U.S.A. east of Mississippi River.

Corval® Cross Linked Rayon

Man-made, cross-linked, regular or crimped cellulosic staple, semi-dull and dull \$.40 per lb.

Topel® Cross-Linked Rayon

Man-made, cross-linked, cellulosic staple, semi-dull and dull \$.37 per lb.
Terms: Net 30 days f.o.b. LeMoyné, Alabama: Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Fibres Co.

Div. Bigelow-Sanford, Inc.

Rayon Staple

Effective October 20, 1960

Regular 1.5 & 3.0 denier Bright & Dull, 1-9/16", 2" .28
White (Crimped) 8 denier 3" Bright28
15 denier 3" Bright28
15 denier 3" Dull28

"KOLORBON"—Solution Dyed Rayon Staple—3" and 6"

	8 Denier Bright	15 Denier Dull	15 Denier Bright
Cloud Grey	.39	.39	
Sandalwood	.39	.39	
Nutria	.39	.39	
Sea Green	.39	.39	
Mint Green	.39	.39	
Champagne	.39	.39	
Midnight Black	.39		.39
Gold	.39	.39	
Turquoise	.39	.39	
Melon	.39	.39	
Capri Blue	.39	.39	
Charcoal Grey	.39	.39	
Coco	.39	.39	
Sable	.39		.39
Tangerine	.59		.59
Chinese Red	.59		.59
Larkspur Blue	.39	.39	
Royal Blue	.59		.59
Lemon Peel	.48	.48	
Kelly Green	.45	.45	
Bitter Green	.59		.59
Brazil		.39	.39
Redwood			.39
Frost Green		.39	
Mist Grey		.39	
Medium Brown		.39	
Dark Brown			.39
Woodtone		.39	
Antique Gold		.39	
Light Turquoise		.39	
Hunter Green		.39	

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

"Zantrel Polynosic" Rayon

Effective August 14, 1959

Man-made, cellulosic staple.
Semi-Bright, 1 denier, 1 9/16" \$.50 per lb.
1 1/2 denier, 1 1/4" and 1 9/16"47 per lb.
3 denier, 1 9/16" and 2"40

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

North American Rayon Corporation

Current Prices

Rayon Staple

Super High Tenacity Bright
No. 1 (Unshrunk) .40
1, 1.5 & 2.3 deniers
No. 2 (Preshrunk) .40
1, 1.5 & 3 deniers

Rayon Tow

High Tenacity
2200/2000 .52
2200/2000 .525
4400/2000 .475
4400/2934 .475
6000/2934 .425

TRIACETATE

Celanese Fibers Company

Current Prices Effective June 7, 1957

(Most Deniers Available in Bright or Dull Luster)

Arnel Staple and Tow

	Bright & Dull
Arnel Triacetate Staple	
2.5 Individual Denier	.55
5.0 Individual Denier	.55
Arnel Triacetate Tow	
2.5 Individual Denier	.60
114,000 Total Denier	
5.0 Individual Denier	.60
90,000 Total Denier or	
180,000 Total Denier	
Packaged on Ball Warps	
Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. east of Mississippi River. Transportation prepaid to	

any U.S.A. destination west of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

NON CELLULOSIC YARN NYLON

Allied Chemical Corporation

Caprolan®

Current Yarn Prices: Effective May 1, 1960

Denier	Fila- ment	Turn/ In.	Twist	Type**	Package	1st Grade Price/Lb.
140	16	1 1/2	Z	B	Cones*	\$1.60
140	16	1 1/2	Z	B	Beams	1.65
200	16	1 1/2	Z	B	Cones*	1.49
200	16	1 1/2	Z	B	Beams	1.54
200	32	3/4	Z	B	Bobbins	1.49
200	32	3/4	Z	B	Beams	1.54
210	32	1	Z	HB	Bobbins	1.49
200	16	1	Z	HB	Bobbins	1.49
420	64	1/2	Z	HBT	Bobbins	1.39
420	64	1/2	Z	HBT	Beams	1.44
520	32	1	Z	B	Bobbins	1.39
520	32	1	Z	B	Beams	1.44
840	136	1/2	Z	HBT	Al. Tubes	0.94
840	136	1/2	Z	HBT	Beams	0.92
1680	272	1/2	Z	HBT	Al. Tubes	0.94
1680	272	1/2	Z	HBT	Beams	0.92
1050	56	1/2	Z	B	Al. Tubes	1.15
2100	112	1/2	Z	B	Al. Tubes	1.11
4200	224	0	O	B	Paper Tubes*	1.10
2100	408	0	O	HB	Paper Tubes*	0.97
2500	408	0	O	HB	Paper Tubes*	0.97
3360	544	0	O	HB	Paper Tubes*	0.96
4200	680	0	O	HB	Paper Tubes*	0.96
5000	816	0	O	HB	Paper Tubes*	0.96
5800	962	0	O	HB	Paper Tubes*	0.96
7500	1224	0	O	HB	Paper Tubes*	0.95
10000	1632	0	O	HB	Paper Tubes*	0.95
15000	2448	0	O	HB	Paper Tubes*	0.95

Terms—Net 30 days.

Price subject to change without notice.

Bobbins are invoiced at 45¢ ea.

Aluminum Tubes are invoiced at 40¢ ea.

Beams are invoiced at \$220.00.

Cradles for beams are invoiced at \$53.00.

* Paper Tubes and Cones non-returnable, no charge.

** Type is used to describe luster and tenacity.

All prices quoted F.O.B. Shipping Point.

Minimum transportation charges allowed and prepaid in Continental United States, excluding Alaska.

American Enka Corporation

Enka Nylon Yarn Prices

Effective July 1, 1960

Den./Fil.	Luster*	Twist	Package	Price Per Pound Standard Sub-
15/1	SD or D	0.5 Z	Tricot Spools	4.00
15/1	SD or D	0.5 Z	Pirns-2 lb.	3.89
20/1	SD	0.5 Z	Pirns-1 lb.	4.03
20/6	D	0.5 Z	Pirns-2 lb.	2.98
20/6	D	0.5 Z	Tricot Spools	3.07
30/6	SD	0.5 Z	Pirns-2 lb.	2.36
40/8-13	SD	0.5 Z	Pirns-2 lb.	2.01
40/8-13	SD	0.5 Z	Tricot Spools	2.11
40/8	SD-B de B	0.5 Z	Pirns-2 lb.	2.10
40/13	D	0.5 Z	Pirns-2 lb.	2.06
40/13	D	0.5 Z	Tricot Spools	2.16
50/13	SD-B de B	0.5 Z	Pirns-2 lb.	1.91
50/13	SD-B de B	0.5 Z	Pirns-2 lb.	2.00
70/16-32	B-SD	0.5 Z	Pirns-2 lb.	1.71
70/32	SD-B de B	0.5 Z	Pirns-2 lb.	1.80
100/32	SD-B de B	0.5 Z	Pirns-2 lb.	1.74
100/32	SD	0.5 Z	Pirns-2 lb.	1.65
140/24-32-64	B-SD	0.5 Z	Pirns-2 lb.	1.60
140/32-64	SD-B de B	0.5 Z	Pirns-2 lb.	1.69
200/16-34	B	0.6 Z	Cones-4 lb.	1.49
200/16-34	B	0.6 Z	Beams	1.54
250/32	SD-B de B	0.5 Z	Cones-4 lb.	1.58
260/16-34	B	0.6 Z	Cones-4 lb.	1.49
400/68	B	0.6 Z	Cones-4 lb.	1.39
520/32	B	0.6 Z	Cones-4 lb.	1.39

*Luster: B—Bright; SD—Semi-Dull; D—Dull; *SD-B de B.

Pirns invoiced at 25¢ or 45¢ each, depending on type. Deposits returned upon return of pirns in good condition. Cones are not returnable. Spools, Beams and Racks are deposit carriers and remain the property of American Enka Corporation.

Terms: Net 30 days from date of invoice. Minimum common carrier transportation charges will be prepaid and absorbed to first destination in the continental limits of the United States excluding Alaska and Hawaii. In prepaying transportation charges, seller reserves the right to select carrier used.

All prices subject to change without notice.

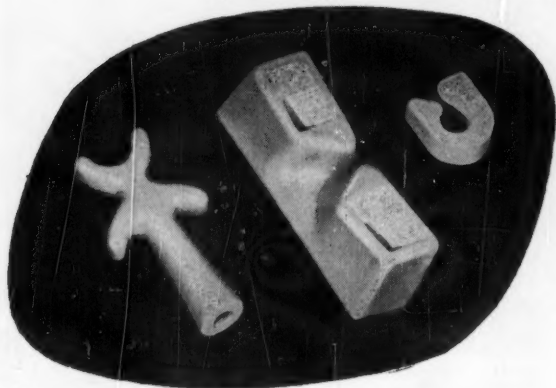
*B de B—Blanc de Blancs®—White of Whites Color.

The Chemstrand Corp.

Current Prices Effective August 11, 1960

Denier	Fila- ment	Twist	Type	Package	Standard Price/Lb.	Second Price/Lb.
10	1	O	SD	Bobbins	\$7.16	\$6.56
15	1	O	SD	Bobbins	3.89	3.69
15	1	O	SD	Spools	4.00	
15	1	O	Dull	Bobbins	3.89	3.89
15	1	O	Dull	Spools	4.00	
20	7	Z	SD	Bobbins	2.91	2.61
20	7	Z	SD	Spools	3.02	
30	10	Z	SD	Bobbins	2.36	2.21
30	26	Z	SD	Bobbins	2.49	2.21
40	10	Z	SD	Bobbins	2.01	1.91

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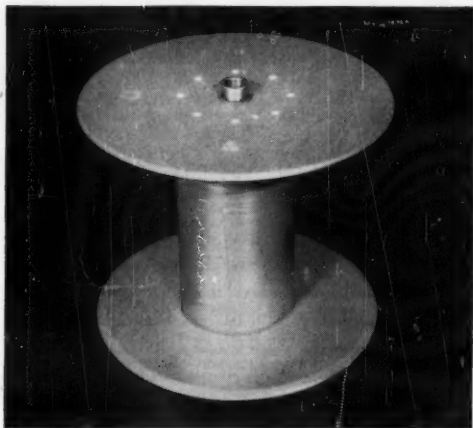
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40	13	Z	SD	Bobbins	2.01	1.91
40	13	Z	SD	Spools	2.11	
40	13	Z	SD	Warp Wind	2.01	1.91
40	13	O	SD	Draw Wind	2.01	1.91
40	13	Z	Dull	Bobbins	2.06	1.96
40	13	Z	Dull	Spools	2.16	
40	13	O	Dull	Draw Wind	2.06	1.96
50	17	Z	SD	Bobbins	1.91	1.76
50	17	O	SD	Draw Wind	1.91	1.76
50	17	Z	Brt.	Warp Wind	1.91	1.76
70	24	Z	SD	Bobbins	1.71	1.66
70	24	Z	SD	Bobbins	1.71	1.66
70	24	O	SD	Draw Wind	1.71	1.66
70	24	Z	SD	Warp Wind	1.71	1.66
70	24	Z	Brt.	Bobbins	1.71	1.66
70	24	O	Brt.	Draw Wind	1.71	1.66
70	24	Z	Brt.	Warp Wind	1.71	1.66
70	24	Z	HB	Bobbins	1.76	1.66
70	24	O	HB	Draw Wind	1.76	1.66
90	28	Z	SD	Bobbins	1.76	1.66
100	28	Z	SD	Bobbins	1.65	1.60
100	28	Z	SD	Bobbins	1.65	1.60
100	28	Z	HB	Bobbins	1.70	1.60
140	68	Z	SD	Bobbins	1.60	1.55
140	68	Z	Brt.	Bobbins	1.60	1.55
200	34	Z	Brt.	Bobbins	1.49	1.44
200	34	O	Brt.	Draw Wind	1.49	1.44
200	34	Z	Brt.	Spools	1.54	
200	68	Z	SD	Bobbins	1.56	1.46
210	34	Z	HB	Bobbins	1.49	1.44
210	34	O	HB	Draw Wind	1.49	1.44
210	34	Z	HB	Warp Wind	1.49	1.44
210	34	Z	HB	Spools	1.54	
210	34	Z	HB	Beams	1.59	
210	34	Z	RHB	Bobbins	1.59	1.44
260	17	Z	HB	Bobbins	1.49	1.39
260	17	Z	HB	Beams	1.54	
420	68	Z	HB	Bobbins	1.39	1.29
520	34	Z	HB	Bobbins	1.39	1.29
720	140	Z	RHB	Tubes	1.04	1.01
720	140	Z	RHB	Beams	1.04	1.01
840	51	Z	HB	Tubes	1.39	1.29
840	140	Z	HB	Tubes	.94	.92
840	140	Z	HB	Beams	.94	.92
840	140	Z	RHB	Tubes	.94	.92
840	140	Z	RHB	Beams	.92	
1040	68	Z	SD	Tubes	1.15	1.05
1680	280	Z	HB	Beams	.92	
1680	280	Z	RHB	Tubes	.94	.90
1680	280	Z	RHB	Beams	.92	
1680	280	Z	RHB	Cones	.95	.91

* Types: D—Dull; SD—Semi-dull; B—Bright; H—High tenacity.

Bobbins are invoiced at 25¢ or 45¢, depending on type; tubes are invoiced at 40¢ each; spools invoiced at \$95.00, \$110.00, and \$115.00, depending on type; and beams and crates for beams are invoiced at \$220.00 and \$25.00 respectively.

Prices subject to changes without notice.

Freight prepaid within Continental United States and Puerto Rico.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
7-1	0	200	Bobbins	\$8.05	\$7.40
10-1	0	200	Bobbins	7.16	6.56
12-1	0	200	Bobbins	6.35	5.85
15-1	0	90	Bobbins	4.90	
15-1	0	90	Beams	5.01	
15-1	0	200	Beam	4.90	
15-1	0	200/280	Bobbins	3.89	3.69
15-1	0	680	Beam	4.00	
15-1	0	680	Bobbins	3.89	3.69
30-1	0		Bobbins	4.13	
20-1	0	200/280	Bobbins	4.03	3.68
14-2	0.22	200	Bobbins	6.72	6.12
17-2	0.22	200	Bobbins	5.95	5.41
20-2	0.22	200	Bobbins	4.71	4.27
15-3	0.22	200	Bobbins	5.19	4.69
21-3	0.22	200	Bobbins	4.70	4.27
20-7	0.52	200	Bobbins	2.91	2.61
20-7	0.52	200	Beam	3.02	
20-7	0.52	680	Bobbins	2.96	2.61
20-7	0.52	680	Beam	3.07	
20-20	0.72	209	Bobbins	6.00	
28-4	0.22	200	Bobbins	2.81	2.61
30-10	0.52	200	Bobbins	2.36	2.21
30-10	0.52	200	Tricot Bms.	2.46	
30-10	0.52	300	Bobbins	2.51	2.36
30-10	0.52	680	Bobbins	2.41	2.21
30-10	0.52	680	Tricot Bms.	2.51	
30-26	0.52	200/280	Bobbins	2.49	2.21
30-26	0.52	200/280	Tricot Beams	2.59	
40-7	0.52	200	Bobbins	2.11	1.91
40-10	0.52	200/280	Bobbins	2.01	1.91
40-10	0.52	200	Tricot Beams	2.11	
40-13	0.52	200	Bobbins	2.01	1.91
40-13	0.52	200	Tricot Bms.	2.11	
40-13	0.52	400	Bobbins	2.13	1.90
40-13	0.52	680	Bobbins	2.06	1.96
40-13	0.52	680	Tricot Bms.	2.16	
40-34	0.52	200	Bobbins	2.21	1.91
50-10	0.52	200	Bobbins	2.11	1.91
50-17	0.52	100/200	Bobbins	1.91	1.76
50-17	0	200	Tubes	1.91	1.76
50-17	0.52	680	Bobbins	2.01	1.76
60-34	0.52	300	Bobbins	1.86	1.76
60-20	0.52	200/280/288	Bobbins	1.82	1.65
70-17	0.52	200/288	Bobbins	1.71	1.66
70-34	0	100	Tubes	1.71	1.66
70-34	0.52	100/200	Bobbins	1.71	1.66
70-34	0	105/205	Paper Tube	1.71	1.66
70-34	0	200/285	Tubes	1.71	1.66
70-34	0.52	280	Bobbins	1.71	1.66
70-34	0.52	288	Bobbins	1.71	1.66
70-34	0.52	300	Bobbins	1.76	1.66
70-34	0.52	680	Bobbins	1.76	1.66

70-34	0	680	Tubes	1.76	1.66
80-26	0.52	200	Bobbins	1.71	1.60
90-26	0.52	200/288	Bobbins	1.76	1.66
100-34	0.52	300	Bobbins	1.70	1.60
100-34	0	300	Tubes	1.70	1.60
100-34	0.52	680	Bobbins	1.70	1.60
100-50	0.52	200/288	Bobbins	1.71	1.60
110-50	0.52	200	Bobbins	1.71	1.60
140-68	0.52	100	Bobbins	1.60	1.55
140-68	0	200	Tubes	1.60	1.55
140-68	0.52	200/288	Bobbins	1.60	1.55
140-68	0	205	Tube	1.60	1.55
140-68	0.52	300	Bobbins	1.65	1.55
200-20	12	100	Bobbins	1.49	1.44
200-34	0	100	Tubes	1.49	1.44
200-34	0.72	100	Bobbins	1.49	1.44
200-34	0	105	Tube	1.49	1.44
200-34	0.72	680	Bobbins	1.54	1.44
200-68	0.72	100/200	Bobbins	1.56	1.46
210-34	0	300	Tubes	1.49	1.44
210-34	0.72	300	Bobbins	1.49	1.44
210-34	0.72	300	Beam	1.54	
210-34	0	305	Tube	1.49	1.44
210-34	0.72	330	Bobbins	1.59	1.44
260-17	12	300	Bobbins	1.49	1.39
400-68	0.72	100	Bobbins	1.39	1.29
420-68	12	300	Bobbins	1.39	1.29
500-68	12	300	Beams	1.44	
520-34	12	300	Bobbins	1.39	1.29
630-102	0.72	300	Bobbins	1.39	1.29
780-51	12	300	Bobbins	1.39	1.29
800-140	0.52	100	Bobbins	1.39	1.29

Nylon Filament "Antron" Yarn Prices

30-10	0.52	560 S.D.	Bobbins	2.46	2.31
40-13	0.52	560 Dull	Bobbins	2.16	2.06
40-13	0.52	560 S.D.	Bobbins	2.11	2.01
50-17	0.52	560 S.D.	Bobbins	2.01	1.86
70-34	0	565 S.D.	Paper Tube	1.81	1.76
70-34	0.52	560 S.D.	Bobbins	1.81	1.76
70-34	0	560 S.D.	DW Tube	1.81	1.76
200-20	0.72	560 Brt.	Bobbins	1.54	1.46
200-34	0.72	560 S.D.	Bobbins	1.54	1.46
200-34	0	565 S.D.	Paper Tube	1.54	1.46
520-34	12	560 Brt.	Bobbins	1.44	1.34
780-51	12	560 Brt.	Bobbins	1.44	1.34

* Antron is DuPont's trademark for its trilobal multifilament nylon yarn.

Color-Sealed Black Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
30-10	0.52	140	Bobbins	\$2.71	\$2.56
40-13	0.52	140	Bobbins	2.36	2.16
70-34	0.52	140	Bobbins	2.06	2.01
100-34	0.52	140	Bobbins	2.00	1.95
200-20	0.72	140	Bobbins	1.84	1.79
200-34	0.72	140	Bobbins	1.84	1.79
260-20	12	140	Bobbins	1.84	1.79

Industrial Yarn

840-140	0.52	*707	Cone	.95	
5040-840	0	*707	Paper Tube	.99	
7560-1260	0	*707	Paper Tube	.98	
10080-1680	0	*707	Paper Tube	.98	
15120-2520	0	*707	Paper Tube	.98	

* Made for cordage use.

840-140	0.52	300/700	Raschel Beams	1.00	
840-140	0.52	300/700	Al. Tbs.	.94	.92
840-140	0.52	300/700	Beams	.92	
1680-280	0.52	300/700	Al. Tbs.	.94	
1680-280	0.52	300/700	Beams	.92	
2520-420	0	700	Paper Tube	.97	
4200-700	0	700	Paper Tube	.96	
5040-840	0	700	Paper Tube	.96	
7560-1260	0	700	Paper Tube	.95	
10080-1680	0	700	Paper Tube	.95	
15120-2520	0	700	Paper Tube	.95	

These prices are subject to change without notice. Terms: Net 30 Days.

Types

- Type 90—Bright, normal tenacity, trilobal—cross section.
- Type 100—Bright, normal tenacity.
- Type 105—Bright, normal tenacity, low shrinkage (5-7%)
- Type 140—Bright, color-sealed, black, normal tenacity.
- Type 200—Semidull, normal tenacity.
- Type 205—Semidull, normal tenacity, low shrinkage (5-7%)
- Type 209—Semidull, normal tenacity, improved light durability and dye light fastness.
- Type 280—Semidull, normal tenacity, improved light durability and dye light fastness.
- Type 288—Semidull, normal tenacity, for Texturing.
- Type 300—Bright, high tenacity.
- Type 305—Bright, high tenacity, low shrinkage (5-7%)
- Type 330—Bright, high tenacity, more heat & light resistant.
- Type 400—Semidull, high tenacity.
- Type 560—Luster as designated—Modified cross section.
- Type 565—Luster as designated—Modified cross section, low shrinkage.
- Type 680—Dull, normal tenacity.
- Type 700—Bright, high tenacity.
- Type 707—Bright, high tenacity cordage yarn.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

Following are invoiced as a separate item.

Bobbins—25 cents or 45 cents depending on type

Aluminum Tube—40¢ each

Draw Winder Tubes—\$1.00

Industrial & Section Beams—\$220.00 each

Racks for Industrial & Section Beams—\$115.00 each

Tricot Beams—\$95.00 or \$250.00 each depending upon type

Racks for Tricot Beams—\$70.00 or \$130.00 each depending upon type

Raschel Beams—\$85.00 or \$100.00 each depending upon type

Racks for Raschel Beams—\$70.00 each

Tricot and Raschel Beams are billed at the above prices if not returned within 90 days from date of invoice.

Section Beams are billed after 60 days, and Industrial Beams after 30 days.

(Beams and Racks are deposit carriers and remain the property of E. I. du Pont de Nemours & Co., Inc.)



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Caprolan Carpets Tested

Thirty-nine midwestern gasoline stations are serving as testing grounds for Aldon Rug Mills' new Golden Sixties carpets in a special promotion by Leath and Co. furniture stores. The 9 by 12, Textured Caprolan nylon carpets have been placed in the service stations' driveways. After 10 days of constant use in the gas stations, the carpets will be displayed in Leath store windows. Half of each carpet will be dry-cleaned and the other half left as it was at the end of the gas station demonstration. Texture retention, ease of cleaning and abrasion resistance of the carpet will be stressed.

Textured Caprolan nylon carpet, the Peerless Rug Co. "Montebello" line, has received its first major Canadian promotion. The Henry Morgan Ltd. stores featured the carpet line in its Montreal area stores throughout October.

New Saco-Lowell Head

W. Frank Lowell was elected president of Saco-Lowell Shops at a recent meeting of the board of directors. Lowell succeeds Thomas J. Ault, who resigned last July. Lowell, formerly senior vice president, has been associated with the company for over 40 years, and has been a director since 1935. He is a former president of the American Textile Machinery Association, a director of the Rockland-Atlas National Bank of Boston, and a director and a member of the executive committee of Scott & Williams, Inc. Lowell's election was lauded by Arnold H. Maremont, president of Maremont Automotive Products, which has acquired about 52% of the stock of Saco-Lowell Shops.

James P. W. Davidson was elected vice president of Saco-Lowell Shops. He previously had been executive vice president of the firm's Automotive Division.

Trade Group Hears Senators

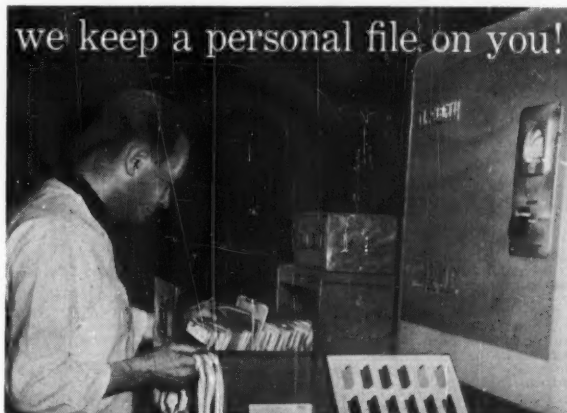
Senator Harrison A. Williams, Jr. (Dem., N.J.) has urged a seven-point program to promote international trade, protect domestic industries from injury and cope with the balance of payments deficit. Noting that U. S. trade provides jobs for more than 4 million Americans, Sen. Williams told the Trade Relations Council at a meeting in New York City on October 26:

(1) The President should have more flexible tools in dealing with Tariff Commission recommendations. (2) The U.S. should be more export-conscious; (3) The U.S. should expand its economic aid and technological assistance program; (4) The U.S. should press for equal tariff concessions and encourage more uniform labor standards abroad. (5) Our country's industrial allies should provide more aid for the underdeveloped countries. (6) The U.S. should improve its investment guarantee programs, particularly in underdeveloped nations. (7) The U.S. should set up an information clearing house on trade developments and opportunities, import data and foreign production costs.

Sen. Prescott Bush (Rep., Conn.) also spoke before the Trade Relations Council, discussing in detail how the Republican Party proposes to help meet the trade challenge of the 1960s.

New Cotton Fabric Line

Mooreville Mills has introduced for Spring 1961 apparel a new fabric line of 100% combed cotton treated with Scotchgard stain and rain repeller. The new "Crackerjack" line, a 6-ounce fabric available in 15 colors, is reported gaining wide acceptance because of its adaptability to a broad range of garment lines.



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POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron"

Denier & Filament	Turns/Inch	Luster	Type*	Package	Tubes 1st Gr.
30-14	0	Bright	55	Tube	\$2.71
30-20	0	Semidull	56	Tube	2.71
40-27	0	Bright	56	Tube	2.31
40-27	0	Bright	55	Tube	2.31
40-27	0	Dull	57	Tube	2.36
70-34	0	Semidull	56	Tube	1.91
70-14	0	Bright	55	Tube	1.91
70-34	0	Bright	55	Tube	1.91
70-34	0	Dull	57	Tube	1.96
100-34	0	Semidull	56	Tube	1.84
140-28	0	Bright	55	Tube	1.79
150-34	0	Semidull	56	Tube	1.79
220-50	0	Bright	51	Tube	1.76
250-50	0	Bright	55	Tube	1.76
1100-250	0	Bright	51	Cone	1.50
1100-250	0	Bright	52	Cone	1.50
1100-250	Ro2	Bright	52	Cone	1.50
1100-250	Ro2	Bright	52	Beam	1.52

Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route within the Continental limits of the U. S., excluding Alaska.

Yarn Types

* Type:

Type 51—Bright, high tenacity.

Type 52—Bright, high tenacity.

Type 55—Bright, normal tenacity.

Type 56—Semidull, normal tenacity.

Type 57—Dull, normal tenacity.

Tubes are invoiced as a separate item at \$.70 each.

Industrial beams and cradles are billed if not returned within 30 days from date of invoice. They are then billed as separate items at \$220.00 per beam and \$15.00 per cradle and are returnable for credit.

"DACRON" is DuPont's registered trade-mark for its polyester fiber.

SARAN

The National Plastics Products Company—

Fibers Division

Odenton, Maryland

Current Prices:

CONTINUOUS FILAMENT

Type	Twist p. l.	Natural	Colors
750/20*		1.75	1.80

* For filter fabrics and other industrial purposes only.

F.O.B. Odenton, Maryland.

Terms: Net 30 days.

NON CELLULOSIC STAPLE & TOW

American Cyanamid Co.

Fibers Division

Effective Date: November 24, 1959

Cyanamid Acrylic Staple

	1st Grade Price (per pound)
2.0 Denier Bright and Semi-Dull	\$1.28
3.0 Denier Bright and Semi-Dull	1.18
5.0 Denier Bright and Semi-Dull	1.18
15.0 Denier Bright, Semi-Dull and Dull	.93

Staple Lengths: 1½", 2", 2½", 3", 3½", 4", 4½". Information provided on request for Deniers, Lengths and Lustres not listed above.

Prices are subject to change without notice.

Terms: Net 30 Days.

F.O.B. Shipping Point—Minimum transportation allowed (Seller's route and method) within the continental limits of the United States excluding Alaska. If Buyer requests and Seller agrees to a route or method involving higher than minimum rate, Buyer shall pay the excess transportation cost.

Note: CRESLAN® is Cyanamid's registered trademark for certain of its acrylic fibers. Use of this trademark is authorized only on properly constructed fabrics, after they have been tested and approved by Cyanamid.

The Chemstrand Corp.

Current Prices

"Acrlan"

Effective July 1, 1960

	Acrlan	Acrlan 16
1.0 denier Semi-Dull and Bright staple		\$1.28
2.0 denier Semi-Dull and Bright staple & tow	\$1.18	1.18
2.5 denier Hi-Bulk Bright and Semi-dull staple and tow	1.18	1.18
3.0 denier Bright & Semi-dull staple & tow	1.18	1.18
5.0 denier Bright & Semi-dull staple & tow	1.18	1.18
8.0 denier Bright & Semi-dull staple & tow	1.18	1.18
15.0 denier Bright & Semi-dull staple & tow	.93	.97

2.5 denier Bright & Semi-dull staple—dope dyed (black) 1.48
3.0 denier Bright & Semi-dull staple & tow dope dyed (black) 1.48
Terms: Net 30 days. Freight prepaid within Continental U. S. & Puerto Rico.

* "Acrlan" is Chemstrand's registered trademark for its acrylic fiber.

The Dow Chemical Company

Textile Fibers Department

Current Prices

"Zefran" Acrylic Staple

2.0 denier Semidull & Bright—Staple only	\$1.28
3.0 denier Semidull & Bright—Staple only	1.28
6.0 denier Semidull & Bright—Staple only	1.18
100% Blends of ZEFRA acrylic fiber (For the Woolen System)	
Type W-2 (average denier of about 2.5)	\$9.99
Type W-4 (average denier of about 4.5)	.94

Terms: Net 30 days.

Transportation Terms: F.O.B. shipping point—Freight prepaid our route within the continental limits of the U. S., excluding Alaska.

* Registered trademark of The Dow Chemical Co.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Orlon" Acrylic Staple & Tow

Type 42	Staple Length	Tow	1st Grade
1.0 Denier Semidull	1½, 1¾, 2, 2½, 3	420M	\$1.28
2.0 Denier Semidull & Bright	1½, 1¾, 2, 2½, 3, 4, 4½	470M	1.28
3.0 Denier Semidull & Bright	1½, 1¾, 2, 2½, 3, 4, 4½	470M	1.28
3.0 Denier Color-sealed Black	1½, 1¾, 2, 2½, 3, 4, 4½	470M	1.63
6.0 Denier Semidull & Bright	1½, 2, 2½, 3, 4, 4½	470M	1.18
6.0 Denier Color-sealed Black	1½, 2, 2½, 3, 4, 4½	470M	1.55
4.5 Denier Semidull	1½, 2, 2½, 3, 4, 4½	470M	1.18
10.0 Denier Semidull & Bright	1½, 2, 2½, 3, 4, 4½	470M	1.18
10.0 Denier Color-sealed Black	1½, 2, 2½, 3, 4, 4½	470M	1.55

High Shrinkage Staple price as Regular Staple

Type 75 \$1.08

This product is designed for Cotton/Rayon System Spinning and is 2.5 denier, 1½" semidull regular shrinkage staple.

Type 89 \$94

This product is designed for woolen system spinning and is a blend of deniers (average 4.2) with a variable cut length.

Type 39A \$99

This product is designed for woolen system spinning and is a blend of predominately fine deniers (average 2.4) with a variable cut length.

Type 39B \$94

This product is designed for woolen system spinning and is a blend of predominately heavy deniers (average 6.5) with a variable cut length.

"ORLON SAYELLE"

Type 21

3.0 denier semidull variable (2½" to 5" average 3¾") staple \$1.53

6.0 denier semidull variable (2½" to 5" average 3¾") staple 1.50

F.O.B. Shipping Point—Freight prepaid our route within the continental limits of the United States, excluding Alaska.

* "ORLON" is Dupont's Registered Trade-mark of its Acrylic Fiber.

"ORLON SAYELLE" is Dupont's Trade-mark for its bi-component Acrylic fiber.

MODACRYLIC

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Current

"Verel" Acrylic Staple and Tow

Deniers	Dull and Bright
2 and 3	\$1.02 per pound
5, 8, and 12	.92
16 and 20	.88
24 denier	.93

Prices are subject to change without notice.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in continental United States, except Alaska. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

* "Verel" is a trade-mark of the Eastman Kodak Co.

Union Carbide Chemicals Co.

Div. Union Carbide Corp.

Textile Fibers Dept.

Effective May 1, 1959

Dynel Staple & Tow

Natural Dynel	
2 Denier, Staple and Tow	1.20 per lb.
3, 6, and 12 Denier, Staple and Tow	1.10 per lb.
24 Denier, Staple and Tow	1.05 per lb.
Dynel Spun with Light Colors:	
Blond, Pewter, and Gray	
3 and 6 Denier, Staple and Tow	1.30 per lb.
Dynel Spun with Dark Colors:	
Black, Charcoal, Brown, Caramel, Green, and Blue	
3 and 6 Denier, Staple and Tow	1.40 per lb.
Dynel Type 80, 12 Denier	.92 per lb.
Dynel Type 63 High Shrinkage (3 Denier only)	Add \$.05 per lb. to above prices

Prices are quoted F.O.B. shipping point, freight prepaid our route, within continental limits United States, excluding Alaska and Hawaii.

NYLON

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Staple and Tow

Denier	Type	Staple Length	Tow Bundle	1st Grade Price/Lb.	2nd Grade Staple Only
1.5	200	1½"—4½"	None made	\$1.33	\$1.18
1.5	201	1½"—4½"	None made	1.35	1.20
2.3	420	1½"—only	None made	1.28	1.13
3.0	100/200	1½"—4½"	430M	1.28	1.13
3.0	101/201	1½"—4½"	455M	1.30	1.15
6.0	100	1½"—6½"	330M	1.28	1.13
6.0	101	1½"—6½"	345M	1.30	1.15
15.0	100	1½"—6½"	425M	1.08	

15.0	101	1½"-6½"	None made	1.10	.....
15.0	600	1½"-6½"	425M	1.10	.....
15.0	601	1½"-6½"	None made	1.12	.....

Staple lengths are restricted to the range shown opposite each denier above. The actual cut lengths within these ranges are as follows:

1½, 1½, 2, 2½, 3, 4½ and 6½

Types

Type 100 Bright, normal tenacity, not heatset.
 Type 101 Bright, normal tenacity, heatset.
 Type 200 Semidull, normal tenacity, not heatset.
 Type 201 Semidull, normal tenacity, heatset.
 Type 420 Semidull, high tenacity, high modulus, no crimp.
 Type 600 Dull normal tenacity, not heatset.
 Type 601 Dull normal tenacity, heatset.
 These prices are subject to changes without notice.

Terms—Net 30 Days.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route within the continental limits of the United States, excluding Alaska.

Industrial Rayon Corp.

Effective August 18, 1958

Nylon Staple

1.5 denier	.....	\$1.33 per lb.
2, 3 and 6 denier	.....	1.28 per lb.
8 denier	.....	1.15 per lb.
15 and 22 denier	.....	1.08 per lb.

Bright, semi-dull, and full-dull. Required lengths.

Terms: Net 30 days f.o.b. point of shipment, title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points in continental United States except Alaska.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

NYTRIL

Celanese Fibers Company

DARVAN

Effective Nov. 21, 1958

Type	Not Crimp Set	Crimp Set
3, 4½ and 6 Denier	\$1.45	\$1.50
1½, 2 Denier	\$1.50	\$1.55

Pack in 100 Lb. and 500 Lb. Bales, Net

Staple lengths 1½, 2, 3, 4½

Tow—90,000 Total Denier

Bright, Semi-dull, Dull

(Deniers and lengths of staple not listed above are available upon special request.)

Terms: Net 30 Days.

F.O.B. Shipping Point (Avon Lake, Ohio) Minimum freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if overland, or port of exit of purchaser's choice east of the Mississippi River.

OLEFIN

Beaunit Mills Inc.

Fibers Division Effective November 1, 1960

Polypropylene Bright Staple

Denier	Price per lb.
1.5	\$.90
3.0	.90
6.0	.90
15.0	.90

Staple cuts are 1½", 2" and 3".

Other lengths are available on request.

Terms: Net 30 days F.O.B. shipping point. Minimum Freight allowed within the continental limits of the United States, excluding Alaska. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point. Prices subject to change without further notice.

Industrial Rayon Corporation

Olefin Staple and Tow

Prolene Staple

Bright Luster

2, 3, 6, and 15 Denier, crimped	\$.90
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Available in 1½" to 6" lengths

Prolene Tow

Bright Luster

2, 3, 6, and 15 Denier, crimped	\$.90
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Terms: Net 30 days f.o.b. point of shipment, title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points in continental United States except Alaska.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

POLYESTER

Beaunit Mills Inc.

Vycron Polyester

Current Prices

Denier	Price Per Lb.
1.5	\$1.00
3.0	1.00
6.0	1.00
15.0	1.00

Staple Cuts are 1½" to 6".

Tow for Converters

(Tow Bundle 200,000 Denier)

Spun Dyed Black 15¢ per lb. extra.

Terms: Net 30 days, F.O.B. shipping point. Minimum freight allowed within the continental limits of the United States, excluding Alaska. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point. Prices are subject to change without notice."

E. I. du Pont de Nemours & Co.

Textile Fibers Dept. Current Prices

"Dacron"*** Staple and Tow

Denier	Luster	Type*	Length	Tow Bundle	1st Gr.
1.5	Semidull	54	1½"-1½"	None made	1.26
2.25	Semidull	64	1½"-4½"	450M	1.41
3.0	Semidull	54	1½"-4½"	450M	1.36
3.0	Semidull	61	1½"-4½"	None made	1.36
3.0	Semidull	64	1½"-4½"	450M	1.41
4.5	Semidull	54	1½"-4½"	450M	1.31
4.5	Semidull	64	1½"-4½"	450M	1.36
6.0	Semidull	54	1½"-4½"	450M	1.31
6.0	Semidull	61	1½"-4½"	None made	1.31
6.0	Semidull	64	1½"-4½"	450M	1.36

* Type:

Type 54—Semidull, Normal Tenacity.

Type 61—Industrial Staple having 45% Shrinkage. Not intended for Dyeable Uses.

Type 64—More Pill Resistant Staple, with Greater Dyeing Versatility.

"Dacron" Polyester Color-Sealed Black

Staple and Tow

2.25	Color Sealed Black	64	1½"-4½"	450M	1.76
3.0	Color Sealed Black	64	1½"-4½"	450M	1.76

F. O. B. Shipping Point—Freight prepaid our route within the continental limits of the United States, excluding Alaska.

** Dupont's Registered Trade-mark for its Polyester Fiber.

Eastman Chemical Products, Inc.

Tennessee Eastman Co. Current

"Kodel"***

Deniers	Semi-Dull Staple	Tow	Black	Brown	Blue
1.5	\$1.33	\$1.41	.....	.....	.....
2.25	1.41	1.41	\$1.76	.....	.....
3.0	1.41	1.41	1.76	\$1.86	\$1.96
4.5	1.36	1.36	.....	.....	.....

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in continental United States, except Alaska. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

** "Kodel" is a trade-mark of the Eastman Kodak Company.

Celanese Fibers Company

Current Prices Effective June 10, 1960

Fortrel Polyester Staple and Tow

Denier	Luster	Price
1.5	Semi-dull	\$1.26
3	Semi-dull	1.36
4.5	Semi-dull	1.31
6	Semi-dull	1.31

Staple lengths 1½", 2" and 3".

All staple packaged in 500 pound bales.

Tow

Denier	Luster	Price
1.5	Semi-dull	\$1.36
3	Semi-dull	1.36
4.5	Semi-dull	1.31
6	Semi-dull	1.31

Total denier of all tow is 225,000.

All tow packaged in 300 to 400 pound cartons.

TERMS: Net 30 days, F.O.B. destination—Freight prepaid our route within the continental limits of the United States, excluding Alaska. Prices subject to change without notice.

VINYON

American Viscose Corp. Effective October 1, 1956

Avisco Vinyon Staple

1.5 denier 1½" Unopened	.....	\$.90 per lb.
3.0 denier 1½" Unopened	.....	.80 per lb.
3.0 denier 1½" Unopened	.....	.80 per lb.
3.0 denier 1½" Opened	.....	.90 per lb.
3.0 denier 2" Opened	.....	.90 per lb.
5.5 denier 1" Opened	.....	.90 per lb.
5.5 denier 1½" Unopened	.....	.80 per lb.

Terms: Net 30 days.

SARAN

The National Plastics Products Company—

Fibers Division

Odenton, Maryland

Current Prices:

Saran Staple

Type	Denier	Natural	Colors
2Y—Upholstery	22	\$0.70	\$0.75
2Y—Upholstery	16	.74	.79
3Q—Industrial Fabrics	22	.68	.72
1C—Carpets	22	.68	.72
1M—Mops	22	.68	.72

In any staple length 1½ to 6". Also 45 denier, 7" cut.

F.O.B. Odenton, Maryland.

Terms: net 30 days.

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Urge New ICA Policies

Directors of the American Cotton Manufacturers Institute, at the opening session of their Fall meeting in Fresno, Calif., passed two resolutions designed to ease present conditions facing American textile manufacturers. One "reaffirms the belief" that the U.S. Government's International Cooperation Administration should be required to obtain at least half of its textile procurements from domestic sources. The other urges ICA foreign aid program administrators to direct industrial development in presently underdeveloped nations away from textile manufacturing.

R. Houston Jewell of the AMCI, in a statement before the annual meeting in Amsterdam, Holland, of the International Federation of Cotton and Allied Textile Industries, pointed out that the U.S. net import balance of textile manufactures will probably reach an all-time high this year. With imports into the U. S. coming in in increasing quantities and from an expanding list of countries, Jewell said, the American industry was understandably "shocked" last Spring when it found "a vast majority of textile items on our Government's preliminary offering list" for the 1961 negotiations under the General Agreement of Tariffs and Trade (GATT).

Creslan-Wool Separates

Miss Pat, a California sportswear house, is featuring for the second season a group of coordinated separates in Rondalay fabrics, a blend of 50% Creslan fiber and 50% wool. The group, called "Riviera Regatta," is keyed to the late Fall-early Spring market, and is based on a navy and white color theme. The coordinates are styled in misses sizes from 6-16 and junior models from 5-15. They will retail from \$10 for the vest to about \$16 for the Capri pants.



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tations. A new supply was printed and are now available. The reprints are 50 cents each
with a discount of 20% for orders of 25 or more. Orders originating in New York City must
add to the price the amount of the 3% city sales tax.

Calendar of Coming Events

Dec. 2—AATT Piedmont Chapter meeting. Hotel Poinsett, Greenville, S. C.
 Dec. 7—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
 Dec. 7—NASMI Board of Directors meeting. Commodore Hotel, New York, N. Y.
 Dec. 9—AATCC New England Section. Colonial Country Club, Lynnfield, Mass.
 1961
 Jan. 4—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
 Jan. 11-13—Cotton Production Mechanization Conference sponsored by the National Cotton Council. Poinsett Hotel, Greenville, S. C.
 Jan. 16-19—Instrument Society of America conference and exhibit. Sheraton-Jefferson Hotel and Kiel Auditorium, St. Louis, Mo.
 Jan. 21—AATCC Piedmont Section. Poinsett Hotel, Greenville, S. C.
 Feb. 7-9—2nd Canadian Textile Conference sponsored by Textile Technical Federation of Canada and Primary Textiles Institute. Queen Elizabeth Hotel, Montreal, Que.
 Feb. 8—AATT annual meeting. Hotel Commodore, New York, N. Y.
 Mar. 20-22—American Physical Society meeting. Monterey, Calif.
 Mar. 1—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
 Mar. 21-23—High-Polymer Physics Div., American Physical Society meeting. Monterey, Calif.
 Mar. 23-25—ACMI annual meeting. Fontainebleau Hotel, Miami Beach, Fla.

Apr. 5—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
 Apr. 12-14—Alabama Textile Manufacturers Association annual meeting. Buena Vista Hotel, Biloxi, Miss.
 Apr. 16-18—Narrow Fabrics Institute spring meeting. The Tides Inn, Irvington, Va.
 Apr. 18-19—Technical Advisory Committee and Board of Trustees meeting. Institute of Textile Technology, Charlottesville, Va.
 Apr. 23—Georgia Textile Operating Executives spring meeting. Hightower Building, Georgia Institute of Technology, Atlanta, Ga.
 Apr. 24-25—Underwear Institute annual meeting. Hotel Dennis, Atlantic City, N. J.
 Apr. 24-28—Knitting Arts Exhibition. Auditorium, Atlantic City, N. J.
 Apr. 26-29—Georgia Textile Manufacturers Association annual meeting. Hollywood Beach Hotel, Hollywood, Fla.
 May 3—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
 Jun. 5-8—ISA Summer Instrument-Automation conference and exhibit. Toronto, Canada.
 Jun. 5-9—Society of the Plastics Industry annual national conference and exposition. Commodore Hotel and Coliseum, New York, N. Y.
 Jun. 7—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
 Jul. 27-Aug. 1—IUPAC International Symposium on Macromolecular Chemistry. Queen Elizabeth Hotel, Montreal, Canada.
 Nov. 13-15—Narrow Fabrics Institute, Inc. meeting. Statler-Hilton, New York, N. Y.

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